Housing an Air Force and a Navy:
The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)

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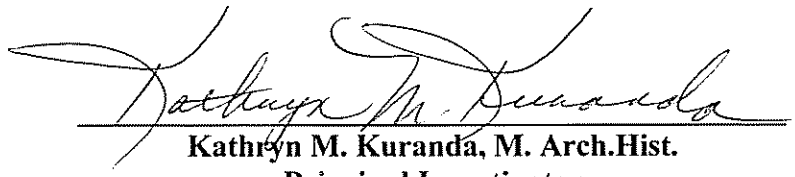
HOUSING AN AIR FORCE AND A NAVY: THE WHERRY AND CAPEHART ERA SOLUTIONS TO THE POSTWAR FAMILY HOUSING SHORTAGE (1949-1962)

Final Report



Kathryn M. Kuranda, M. Arch.Hist.
Principal Investigator

by

Kirsten Peeler, M.S., Christine Heidenrich, M.A.,
Katherine E. Grandine, M.A., and Dean A. Doerrfeld, M.A.

R. Christopher Goodwin & Associates, Inc.
241 E. Fourth Street, Suite 100
Frederick, Maryland 21701

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TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

FIGURES FOR APPENDIX A

LIST OF TABLES

TABLES FOR APPENDICES

Appendix A

Appendix B

Appendix D

Appendix E

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J

1.0 EXECUTIVE SUMMARY

This historic context, *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962),* was prepared to support the Departments of the Air Force and the Navy in executing the *Program Comment for Capehart and Wherry Era Housing at Air Force and Navy Bases.* The Advisory Council on Historic Preservation issued the draft program comment on 10 September 2004 and the final comment on 18 November 2004. The Department of the Air Force and the Department of the Navy published their acceptance of the program comment in the *Federal Register* on 18 November 2005. This programmatic treatment for residential properties was developed in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, to take into consideration the effects of future management activities upon Air Force and Navy housing constructed between 1949 and 1962.

The provisions for Program Comments contained in 36 CFR 800.14(e) of the Advisory Council on Historic Preservation's regulations were applied by the Air Force and the Navy in developing an integrated and cost-effective approach to NHPA requirements that is consistent with the Air Force's and Navy's need to provide quality military family housing. The programmatic treatment includes the current study, neighborhood design guidelines, a brochure for developers highlighting the Federal Rehabilitation Tax Credit program, and oral interviews with former residents of Air Force and Navy Capehart and Wherry era family housing. In addition, the Air Force and the Navy were required to identify Properties of Particular Importance as part of the revised and expanded context study. The Air Force and Navy will consider the Properties of Particular Importance in planning efforts.

Wherry and Capehart era family housing is included in the real property inventories of all three branches of the U.S. Armed Forces. A total of 25,770 single-family and multi-family buildings dating from the era currently are located at Air Force, Navy, and Marine Corps installations and are subject to a current housing privatization initiative. The 2006 Air Force inventory includes 19,965 buildings from the period. The Navy family housing inventory includes 6,151 buildings and the Marine Corps inventory incorporates 2,665 buildings.

The current study supplements an earlier investigation, *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)*, prepared for the United States Army Environmental Center (USAEC). This earlier study developed an historic context for Army housing of the era and included discussions on the broad social history of housing in the postwar United States, changing Army demographics, the legislative history of the Wherry and Capehart Acts, and housing design. The current investigation expands upon this earlier Army work to present data on the Air Force and the Navy housing programs. The two studies are independent, but complementary investigations. R. Christopher Goodwin & Associates, Inc., completed the current investigation on behalf of the Departments of the Air Force and the Navy through the U.S. Army Medical Research Acquisition Activity (USAMRAA).

The armed forces faced an unprecedented family housing shortage in the years following World War II. This housing shortage strained Air Force and Navy morale and impacted personnel retention rates. The Air Force and the Navy sought to solve their housing shortages through the construction of dwellings comparable to those found in the civilian market.

Congress traditionally funded Navy construction through the Federal appropriations process. The Air Force, which was established in 1947, had no established housing program. Generally, Air Force housing stock historically was associated with Army Airfields; these assets were transferred to the Air Force after the service was created. In the first years of the postwar military housing shortage,

Congress authorized the construction of family housing but limited appropriations. Low funding levels translated to slow progress in meeting military family housing demand.

The Wherry Act and later Capehart Act were the legislative vehicles for addressing the military family housing shortage. Innovative solutions were developed involving the private sector through financial incentives administered by the Federal Housing Administration (FHA). Between 1949 and 1962, an estimated 62,475 Wherry units and 77,208 Capehart family housing units were added to the Air Force, Navy, and Marine Corps family housing inventories. The Air Force constructed a significantly larger number of units than the Navy due to the fact that it was the newest of the military services and it had the smallest number of housing units in its inventory. In fact, the Air Force constructed more Capehart units than the Army and Navy combined. The Wherry and Capehart units were augmented through the construction of an additional 6,607 housing units built through the Federal appropriations process. Table 1 summarizes Wherry and Capehart housing built between 1949 and 1962, and the current inventory.

Table 1. Wherry and Capehart Housing Constructed between 1949 and 1962 and Current Inventory

Service	Wherry Units		Capehart Units	
	1949-1962 Inventory	Current Inventory	1949-1962 Inventory	Current Inventory
Air Force	38,014	5,388	62,816	19,933
Navy	17,434	3,196	10,020	7,049
Marines	7,027	496	4,372	2,786

Note: See Appendices D and E for breakdowns by installation

Source: For historic inventory, see Page D-1. For current inventory, Air Force Real Property Inventory (RPI), Internet Navy Facility Assets Data Store Management System Database (iNFADS)

Implementation of the Wherry and Capehart programs was a complex process. Base Commanders provided general information to sponsors on base housing needs and were involved in the preliminary design and site selection for Wherry and Capehart era neighborhoods. Installations assumed responsibility for selecting the civilian architects and developers. The Army Corps of Engineers, in the case of the Air Force, and the Bureau of Yards and Docks, in the case of the Navy, acted as construction managers. Each service consulted with the FHA to ensure compliance with FHA guidelines, and provided project oversight applying program criteria and department policies and instructions for Wherry and Capehart proposals.

Per-unit size and cost limitations resulted in a housing stock characterized by restrained exterior design, uniformity, and standardization in plans and materials. Neighborhoods were created that were dominated by single-family and duplex dwellings and that reflected the plans of civilian housing developments in street plan, lot organization, and landscaping.

Wherry and Capehart era military housing represents a nationwide construction campaign that reflected significant changes in the peacetime military. When constructed, the Wherry and Capehart era buildings and neighborhoods reflected their era of construction through such character-defining features such as windows and doors, exterior materials, roof form and sheathing, landscaping and, amenities. Many Wherry and Capehart era neighborhoods have undergone considerable change since constructed during the 1950s and 1960s.

In accordance with the Program Comment published by the Advisory Council on Historic Preservation, the Air Force and the Navy reviewed the historic context study to identify potential properties of particular importance. Based on the analysis of the historic context, the following properties were identified as properties of particular importance within the Wherry and Capehart era due to their historical association and resource integrity:

- Three senior officer housing designed in the International Style by Richard J. Neutra located at Mountain Home Air Force Base, which represent the work of an important architect for the military under the Capehart Act, and

- The Catalina Heights neighborhood at Naval Base Ventura County as a collection of Capehart program dwellings that collectively convey the principles of postwar suburbanization adapted to a military context.

The current illustrated study is the result of an integrated program of archival research, site investigation, data analysis, and report preparation undertaken in 2005. The results of the study are presented in the following technical report.

2.0 INTRODUCTION AND METHODS

2.1 INTRODUCTION

The Department of the Air Force (Air Force) and the Department of the Navy (Navy) are the stewards of historic properties located on their installations. These non-renewable resources include properties associated with the historical development of the Air Force and the Navy, as well as resources important in American history and prehistory. Cultural resources include real property, personal property, records, and community resources. Historic properties are defined as those resources that possess those qualities of significance and integrity necessary for listing in the National Register of Historic Places (36 CFR 60.4 [a-d]). The Air Force and the Navy undertake ongoing programs to identify, evaluate, and manage their vast collections of cultural and historic resources in accordance with Federal laws, directives, and Air Force and Navy regulations.

As part of the Conference Committee Report to the Defense Appropriations Act for Fiscal Year 1997, Congress directed the armed services to develop strategies to reduce costs associated with the management of historic properties. The large inventory of family housing constructed under the Wherry and Capehart era programs (1949-1962) presented a unique opportunity to develop an innovative and cost-effective programmatic approach to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Air Force and the Navy developed a programmatic treatment for the management of Wherry and Capehart era housing as a class of resources that addressed both the Congressional mandate and the requirements of Section 106.

A total of 6,151 Wherry and Capehart era buildings currently are located at Navy installations, 2,665 buildings are located at Marine Corps installations, and 16,954 buildings are found at Air Force installations. This housing stock is approaching or has attained the 50-year age generally required for consideration for listing in the National Register of Historic Places, as well as consideration under Section 106 of NHPA. To take into account the effects of management activities on Wherry and Capehart era housing that might be historic, the Air Force and the Navy utilized the provisions for Program Comments contained in 36 CFR 800.14(e) of the Advisory Council on Historic Preservation's regulations. The programmatic treatment for this class of military housing includes this current study, which expands the earlier historic context prepared for the U.S. Army Environmental Center, *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962);* neighborhood design guidelines; a brochure for private developers highlighting the Federal Rehabilitation Tax Credit program; and, oral interviews with past Air Force and Navy residents of Wherry and Capehart era housing.

2.2 PROJECT DESCRIPTION

This report is the first phase of this proactive, programmatic approach to Wherry and Capehart era Air Force and Navy family housing. The study discusses post-World War II Air Force and Navy demographics and impacts upon family housing needs, and summarizes the broad social history of post-World War II suburbanization, housing trends, and low-cost housing programs. Legislative solutions to the housing shortage are explored in detail. The report identifies architects, contractors, and builders associated with the Wherry, Capehart, and appropriated-funds housing programs, as well as regional styles and types of buildings constructed under the programs.

Named for their sponsors in the U.S. Senate, the Wherry (1949-1956) and Capehart (1955-1962) programs addressed the severe housing shortage and substandard conditions of existing military housing endemic to active military installations at the end of World War II. A limited number of units

were constructed using funds appropriated by Congress. This housing was concurrent with the Wherry and Capehart programs. Although some units were constructed as early as 1949, the majority of family housing units constructed under this program were built in the late 1950s and early 1960s during a period of increased appropriations for military construction. During the lives of the respective programs, approximately 62,475 Wherry housing units, approximately 77,208 Capehart housing units, and approximately 6,607 appropriated-funds housing units were designed and constructed for the Air Force and the Navy.

Previous contextual studies focused on the legislative background and program implementation for these housing programs. Other investigations have been completed for resources at individual installations. The current study expands the earlier historic context, *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949 – 1962)* to include data on the Air Force and the Navy. The current historic context is designed as an independent study that supplements the Army investigation.

Federal family housing policy during the immediate postwar years through the 1950s was complex. This policy included more than 30 legislative programs with differing goals and requirements (Bailey 1958:30). These housing programs included dwellings constructed under Title II and Title VI of the National Housing Act of 1934. The housing policy also included Housing and Home Finance Agency (HHFA) disposal programs. In some cases, the Navy attempted to acquire previously constructed Public Housing Administration units to address its own needs. The Air Force and the Navy also constructed trailer parks to alleviate their housing shortage.

Off-base residential neighborhoods also were built during this period for military personnel and are not currently included in the Air Force and Navy family housing inventories. These neighborhoods contain dwellings constructed under Title IX, Public Law 139. This law resulted in the construction of approximately 50,500 permanent housing units by authorizing Federal mortgage insurance to private enterprises. Dwellings constructed under Title IX were excluded historically in tabulations of military family housing due to their private ownership and because they were not restricted to military occupancy.

The current investigation focuses on Air Force and Navy housing in the active inventory of military property that was constructed under the Wherry Act and the Capehart Act, and through Federal appropriations during the period 1949–1962. Housing units constructed under other programs; defense housing, which was sold to private parties; and housing whose ownership was transferred to local governments were excluded from the current study. Current Air Force and Navy inventories identify housing units in the active inventory and do not capture units originally constructed as family housing and later converted to other uses.

2.3 HISTORIC CONTEXT APPROACH

2.3.1 Definition of the Historic Context

A historic context is a theoretical framework that is used to group information on related properties based on a theme, geographic area, and chronological period. *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962*) provides a framework for assessing the relative significance of family housing constructed between 1949 and 1962 that is located at active Air Force and Navy bases. National Register Bulletin 24 *Guidelines for Local Surveys: A Basis for Preservation Planning* (National Park Service [NPS] 1985)

and Bulletin 15 *How to Apply the National Register Criteria for Evaluation* (NPS 1995) provided technical guidance in the development of the historic context.

The three elements of a historic context are time period, geographic area, and theme. This study explores the historic context defined as:

Time Period:	1949-1962
Geographic Area:	United States
Theme:	Air Force and Navy Family Housing Construction.

The time period defined for this project comprises the years 1949-1962, the active period of the Wherry and Capehart Acts. It includes events initiated under the Wherry Act and extends to events directly related to the expiration of the Capehart Act in October 1962. In addition, the study addresses dwellings constructed using military construction funds appropriated through Congress. The geographic area for this study is the United States, including the contiguous 48 states, Alaska, and Hawaii.

The themes explored in this project relate to the Air Force's and the Navy's post-World War II family housing construction program. The properties associated with these themes represent several facets of history. The research design for this project focused on developing three historic themes within the historic context:

(1) military – changing military demographics and their relationship to the Cold War Air Force and Navy organizational structures;

(2) social history – the relationship between Wherry and Capehart era housing and the broad trends of post-World War II suburbanization; and,

(3) architecture – the evolution of mass-produced housing represented by the Wherry and Capehart era units and associations with prominent architects and builders.

The United States faced a severe housing shortage following World War II that included both the civilian sector and the military. Contemporary accounts recorded in the popular press and in testimony during Congressional hearings on military housing documented housing conditions. The existing inventory of on-base housing was ill-suited to meet the housing demand. Military housing was dominated by limited numbers of permanent housing and temporary quarters designed for wartime training and mobilization rather than postwar family life. The civilian rental market offered little relief for the military housing shortage. The national housing shortage inflated rents in residential markets. Often, military personnel were unable to afford decent housing and, in many cases lived in substandard housing that lacked running water, indoor plumbing, and central heat.

All branches of the military faced re-enlistment problems, in large part due to the family housing shortages and the poor condition of the few existing units. To address the shortfall, the military establishment sought legislative action to increase the number and quality of family housing units. The historic context presents a detailed discussion of the similarities and differences between the Wherry, and Capehart programs and compares Wherry and Capehart housing to housing constructed with appropriated funds. Property types are defined and designers identified. Changes and modifications to the units over time are identified and the impact upon their integrity assessed.

2.3.2 Property Types

A property type is a group of individual properties that share physical or character-defining features. Property types provide the link between history and real property. Several types of housing were constructed under the Wherry and Capehart programs and with appropriated funds to alleviate the military housing shortage. The types include:

Single-family detached dwellings,
Duplexes, and
Multi-family buildings comprising three, four, five, six, or eight units.

The Wherry and Capehart Acts resulted in the construction of family housing on a scale previously unseen at Air Force and Navy bases. The programs also incorporated urban planning principles and design philosophies from the 1950s in an effort to provide military housing comparable to civilian housing of the period.

2.4 METHODOLOGY

Four primary tasks were completed during the course of the current study. These tasks were archival research, field investigation, data synthesis, and report preparation. Data were collected and analyzed to identify trends in post-World War II suburbanization, to identify Air Force and Navy family housing policies and programs, to identify post-World War II Air Force and Navy demographics, and to identify architects, contractors, and builders associated with the three housing programs.

2.4.1 Archival Research

Previous studies on Wherry and Capehart era housing were reviewed. Those studies included *"For Want of a Home…" A Historic Context for Wherry and Capehart Military Family Housing* (U.S. Army Environmental Center 1996) and *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (U.S. Army Environmental Center 2003). These reports, which discussed the legislative histories of the two programs and the design of the units, provided the springboard for the current expanded study. In addition, cultural resources surveys completed for the Naval Facilities Engineering Command Engineering Field Division South provided background data and housing conditions at several Navy installations.

A comprehensive literature search of secondary sources uncovered broad themes in postwar suburbanization and Federal housing policy. Researchers consulted resources on changing civilian and military demographics. In addition, resources on contemporary house design and trends were identified and synthesized. The resources consulted yielded information on the numerous reasons for suburbanization and provided detailed analyses of housing policy. Published primary sources reviewed included Congressional reports, hearings, and government documents. The Congressional reports and hearings provided discussions on legislation, as well as statistics on the shortage of family housing units and the number of units constructed. Statistical data obtained from the United States Census Bureau provided information on population and housing trends. Repositories consulted during general data collection included the Library of Congress, Washington, D.C.; the University of Maryland Library, College Park, Maryland; and the Navy Library, Washington, D.C.

Primary sources were reviewed at the National Archives and Records Administration, College Park, Maryland; the Naval Facilities Engineering Command Archives, Port Hueneme, California; and Headquarters, Air Force Housing Office, Crystal City, Virginia.

The collections of the National Archives included the files of key agencies, and provided access to program memos and data collected for Congressional reports and hearings. Cartographic records and still-picture records of the National Archives also were reviewed. The following Record Groups at the National Archives were reviewed:

- 52 – (Navy) Bureau of Medicine and Surgery
- 71 – Bureau of Yards and Docks
- 80 – Department of the Navy (1804-1958)
- 127 – Marine Corps
- 207 – Department of Housing and Urban Development
- 340 – Office of the Secretary of the Air Force
- 341 – Headquarters U.S. Air Force (Air Staff)
- 342 – U.S. Air Force Commands, Activities, and Organizations
- 385 – Naval Facilities Engineering Command
- 428 – Department of the Navy (1941-1981)

Information on Navy projects was obtained from archival files at the Naval Facilities Engineering Command Archives at Port Hueneme. This archives contained base-specific files of architect-engineer and construction contracts and information on the composition and status of projects; general files organized by topic that provided broad information on the Navy Wherry, Capehart, and appropriated-funds programs; photos; and, drawings.

Information on architects and contractors associated with the Air Force Capehart program was obtained from the Progress Reports for Capehart Housing Projects. Each service was required to complete a report for each Capehart project at each installation. The reports included data on the architect and engineering firm, the contractor, the number of units, the completion date, the overall number of units constructed, the number of units constructed by rank and number of bedrooms, and a general description of the materials. The Air Force Progress Reports were obtained from Headquarters, Air Force Housing. A limited number of Progress Reports were found for the Navy and none were found for the Marine Corps. The historical record on Wherry architects and contractors is thin for both services. The lack of archival data suggests the Wherry program was more decentralized than the Capehart program. The number of identified architects associated with the Wherry program was significantly less. Research on the architects involved in the housing programs was conducted at the American Institute of Architects library in Washington, D.C.

2.4.1.1 Research Challenges

The large number and nationwide distribution of Wherry and Capehart era housing presented unique research challenges. Properties from the recent past frequently lack the body of established scholarship associated with older resources. Although the housing programs were national in scope, their decentralized nature resulted in decentralized records. Wherry and Capehart era projects were administered at the installation and regional levels, with the Army Corps of Engineers and the Bureau of Yards and Docks acting as project managers. Although other agencies were involved with project design, the local nature of the projects and the types of records produced suggested that installations kept the data. A review of retention policies indicated that agencies did not retain project-specific

documentation. Data related to program policies were not retained once new policies were developed. Contracts for many individual Navy projects and several Marine Corps projects were retained by the Navy and are housed at the Naval Facilities Engineering Command Archives, but similar data was unavailable for Air Force projects. In many cases, plans, specifications, and contract documents for individual housing projects were not forwarded for archiving on a national level. Each service retained different types of data; what was available for the Navy was not necessarily available for the Air Force.

Data were scattered throughout a number of repositories, including the National Archives and Records Administration; the Library of Congress; the Naval Engineering Facilities Command Archives; Headquarters, Air Force Housing Office; the Navy Library; and, the University of Maryland. Site-specific data was gathered from the housing and real property offices at individual Navy and Air Force bases. Other repositories that might have provided information but were not consulted include the Navy operational archives, which was closed during the research phase, and the National Museum of the Marine Corps, scheduled to open in late 2006.

Another research challenge in preparing this expanded historic context was to provide data on the Air Force and Navy including a discussion on changing military demographics in relation to Air Force and Navy family housing policy. Archival research was undertaken to compile data on the number of married Air Force and Navy officers and enlisted personnel, number of dependents, and general statistical data. The Air Force and Navy compiled little data on military families during the period.

The lack of data on military families has challenged researchers for a number of years. In his 1970 study on enlisted men, Charles Moskos stated "(T)he military family is a most under-researched topic" (Moskos 1970:68). Sociologists studying military families also noted the recent development of the field. Contemporary Air Force memoranda express similar difficulty in obtaining statistics on demographics. As one memorandum stated, the "Air Force Finance Center was asked for statistical data but advised that it was not readily available" (Clark 1961:1).

Only recently has the military family been identified as a meaningful area of research and investigation. This change in perception has arisen largely because of a growing concern and interest by the military community "… as to the effect of the military on the family, and likewise, the effect of the family on the military. Owing to the relative novelty of the topic, research on the military family has suffered from *nonproliferation of reports*, *difficulty in locating existing reports*, and *the subsequent isolation of existing reports from the general public"* [emphasis added] (McCubbin et al 1976:320). Research on Navy and Air Force demographics lagged behind that of the Army. When researchers began exploring military demographics, they began with the largest military service: the Army.

Until the late 1970s, research on military families focused on clinical services for families or on families with special needs (Segal 1986:185). Since the late 1970s, the military, the media, and social scientists have paid increasing attention to the study of military families as a broad topic (Segal 1986:185-186). It was not until the early 1970s that the Navy began to seriously study the military family. Although the Navy studied the effects on families of returning prisoners of war, the agency, Family Studies Branch, eventually expanded to include other studies on the Navy family. The Air Force undertook a service-wide study on the family in 1979.

The armed services did not focus on the military family or develop policies or services relevant to military families until the 1980s. The Department of Defense did not establish an office to address family policy until 1986. The office evolved and became the Department of Defense Office of

Family Policy, Support and Services in 1988. Its duties were expanded to include family policy, family advocacy, and military family resource centers (Brown 1993:166). Marine Corps Family Service Centers were established in 1980, and Air Force Family Support Centers were established in 1981. The Navy established Family Service Centers during the early 1980s. These centers provided all manner of social and mental health services for members of the military and their families.

The limited information available on Air Force and Navy demographics was obtained from marriage statistics provided during testimony at Congressional hearings, and in Department of Defense reports on family housing. Limited statistics and overall historical information on women in the armed forces were provided by non-military sources, such as the Women in Military Service for America Memorial Foundation.

2.4.2 Field Investigation

Field visits to five Air Force, Navy, and Marine Corps installations with inventories of Wherry, Capehart, and appropriated-funds housing provided architectural data for the current study. Criteria for site selection were developed in consultation with the Departments of the Navy and the Air Force. A list of active bases with Wherry and Capehart era housing generated by the Air Force's Real Property Inventory Database and the Navy's and Marine Corps' Internet Navy Facility Assets Data Store Management System database provided the basis for selecting the installations. Several criteria were applied to the list to determine the best representative of Wherry and Capehart era neighborhoods. Sites were selected to represent geographic diversity and bases whose housing stock was not privatized by October 2005. In addition, site selection criteria considered the number of types (Wherry, Capehart, or appropriated funds) and diversity of units (i.e. one-, two-, or three-bedroom units); style and association with important architects or designers; ability to demonstrate post-World War II planning principles and suburbanization themes; and, ability to represent post-World War II housing trends.

Field investigations included reviews of on-base historic records and on-site architectural surveys. Building exteriors and interiors were inspected to document different housing types, character-defining features, interior plans, construction materials, and architectural design common to this class of housing. In addition, neighborhood layouts and landscape elements were surveyed. Based on the Air Force, Navy, and Marine Corps databases, the five sites for case studies selected in consultation with the Departments of the Air Force and the Navy, were:

- Naval Base Ventura County (NBVC), California (Naval Aviation Shore Command);
- Naval Support Activity (NSA) Mid-South, Tennessee (Command Navy Region Southeast);
- Marine Corps Air Station (MCAS) Cherry Point, North Carolina (Commander Marine Corps Air Bases East);
- Mountain Home Air Force Base (AFB), Idaho (Air Combat Command); and,
- Travis AFB, California (Air Mobility Command).

In addition to architectural surveys, installation-level investigations included on-site research. Data reviewed at the five installations included original architectural drawings, original floor plans, real property cards that tracked changes over time, and statistics detailing the number of units originally constructed versus the number of units extant. In addition, installation personnel knowledgeable about the housing provided valuable information. The results of these investigations were incorporated into the historic context and the case studies in Appendix A of this document.

2.4.3 Data Synthesis and Analysis

The Secretary of the Interior's Standards for Historic Preservation and technical guidance developed by the National Register Program, the National Park Service, and the Departments of the Navy and the Air Force were consulted in the development of the historic context. An analysis of archival research and field data provided the framework developed for the context. The study developed the historical themes of suburbanization, military history, and public policy as well as identified housing types related to the housing programs. An examination of postwar housing and important architects associated with the housing programs developed the theme of architecture.

2.5 REPORT ORGANIZATION

2.5.1 Report Organization

The current illustrated study is the result of an integrated program of archival research, site investigation, data analysis, and report preparation undertaken in 2005. The results of the study are presented in the following technical report, which is organized into the following chapters.

- Chapter 2, *Introduction and Methods,* details project objectives and methodology.

- Chapter 3, *The Problem,* presents the family housing challenge faced by the Air Force and the Navy in the postwar years. This chapter also provides a brief overview of the broad changes in postwar civilian culture and housing that influenced the development of comparable military housing. Finally, government policies and programs affecting civilian housing patterns in the postwar period are explored.

- Chapter 4, *Legislative Remedy: Wherry and Capehart Acts,* presents a discussion of the enactment and implementation of the Wherry and Capehart Acts.

- Chapter 5, *Housing Constructed under Military Construction, Air Force and Military Construction, Navy*, presents a discussion of Air Force and Navy housing construction funded through Federal appropriations.

- Chapter 6, *The Solution: Wherry, Capehart, and Appropriated-Funds Housing*, discusses the design criteria adopted for Wherry, Capehart, and appropriated-funds housing.. The designs of the resulting neighborhoods and dwellings are analyzed.

- Conclusions and recommendations are presented in Chapter 7.

Thirteen technical appendices support the narrative report.

- Summarized site reports for five installations containing Wherry, Capehart, and appropriated-funds housing are contained in Appendix A.

- Architects and sponsors identified for Wherry, Capehart, and appropriated-funds housing projects are found in Appendices B and C.

- A comprehensive list of Air Force and Navy Wherry, Capehart, and appropriated-funds housing projects by installation is contained in Appendix D.

- A comprehensive list of Wherry, Capehart, and appropriated-funds housing in the current Air Force and Navy inventories is provided in Appendix E.

- A analysis of case studies to determine properties of particular importance and recommendations for properties of particular importance are included in Appendices F and G.

- A list of Federal Housing Administration square footages by building type is included in Appendix H.

- Federal housing legislation related to Wherry and Capehart era housing is provided in Appendix I.

- A glossary of key terms is included in Appendix J.

- A List of Acronyms is included as Appendix K.

- Oral history interviews with former residents of Wherry and Capehart housing are provided in Appendix L.

- Resumes of project personnel appear in Appendix M.

3.0 THE PROBLEM

3.1 SUMMARY

Following World War II, world political conditions mandated that the United States maintain a large active-duty military comprising highly trained personnel. All branches of the military invested substantially in training and recognized the advantages of personnel retention. Military family housing conditions and shortages in the postwar years affected morale and force retention. Military officials sought to encourage long-term commitments to military service by improving military family housing to levels comparable to those found in the private sector (U.S. Senate 1954:26-7).

Several factors contributed to the housing problem. In the postwar period, the military revised its housing policies, entitling enlisted personnel to family housing. The standing military was larger than during earlier periods of peace, and greater numbers of enlisted personnel were accompanied by dependents. As a result, military families competed for a limited number of living quarters.

In addition, much of the military's housing stock consisted of deteriorating temporary housing that had been built to support rapid military mobilization during the war years. Military spending in the immediate postwar period focused on reorganization and readiness, not on the construction of family housing. Finally, nationwide economic prosperity created higher national living standards and released a pent-up demand for housing dating from the Depression and World War II. The resulting civilian housing shortage gave military families few options for economical and convenient rental housing. Military housing development comparable to that found in the private sector was one tool for retaining quality personnel (U.S. Army Environmental Center [USAEC] 2003:3-1). The Air Force and the Navy drew upon a successful history of family housing for officers, but faced the added challenge of providing family housing on a large scale to enlisted personnel (USAEC 2003:3-1).

The following explores the factors contributing to the Air Force and Navy housing crisis. The discussion provides overviews of the postwar Air Force and Navy, military family housing policies, housing trends in the civilian market that influenced military family housing, and government policies that influenced housing construction during the postwar period.

3.2 THE POSTWAR AIR FORCE AND NAVY

3.2.1 Introduction

The United States armed forces dramatically expanded in size when compared to pre-World War II levels. The adversarial relationship between the Soviet Union and Western allies evolved into the prolonged tensions of the Cold War period (USAEC 2003:3-2). Previously isolationist, U.S. foreign policy shifted focus to deterring worldwide Communist expansion. The military services developed new technologies, including nuclear weapons, to counter this threat. The Air Force, with its air delivery power, was essential to this strategy. The Navy expanded its worldwide presence and developed new conventional and nuclear capabilities (USAEC 1997:16, 23; Isenberg 1993:134).

In order to attract and to retain the skilled military professionals necessary to support foreign policy, the Department of Defense recognized the need to revise its restrictive policies on married personnel and to provide more family housing. Both the Air Force and Navy faced massive housing shortages, and neither service immediately received funding to alleviate the problem in a meaningful way through traditional military construction procedures. As a result, both services relied on

temporary World War II-era buildings. Congress soon began to address the housing shortage through legislation.

3.2.2 Post-World War II Foreign Policy

The United States pursued an expanded role in international policy after World War II, as relations deteriorated with the Soviet Union, one of the four allied powers during the war. Communist governments assumed power in Poland, Hungary, Bulgaria, Romania, and Czechoslovakia. In a well-known 1946 speech in Fulton, Missouri, Great Britain's Prime Minister, Winston Churchill, declared that the Soviets were lowering an "Iron Curtain" across Europe. Following these developments, American foreign policy shifted focus to deterring Communist expansion. In April 1949, the United States, Canada, and ten western European nations formed the North Atlantic Treaty Organization (NATO) as part of a pact to provide mutual defense. Meanwhile, the Soviet Union formed the Warsaw Pact of Communist-controlled nations. These new military obligations required quick mobilization and an ongoing military presence in friendly foreign nations (USAEC 2003:3-2; USAEC 1997:15-20). The United States also addressed national defense. Earlier in its history, the United States had relied on the country's isolation between two oceans for protection from foreign aggression, but potential adversaries now could attack the country by air.

Despite this threat, both the Truman and the Eisenhower administrations favored fiscal austerity in U.S. military budgets. The United States and the Soviet Union both possessed the technology for nuclear weapons. The United States deployed atomic bombs over Hiroshima and Nagasaki at the end of World War II, while the Soviet Union successfully detonated an atomic bomb in September 1949. U.S. foreign policy emphasized containing Communist expansion through the threat of nuclear retaliation. Eisenhower's approach was called the "New Look" policy. For budgetary as well as strategic reasons, the New Look policy increased reliance on air power for both weapons delivery and domestic defense, and decreased reliance on more expensive conventional ground forces (USAEC 2003:3-2; USAEC 1997:16, 19, 23).

3.2.3 Armed Forces Reorganization and Weapons and Doctrine Development

The National Security Act of 1947 consolidated the Army, Navy, and newly independent Air Force under the National Military Establishment headed by the Secretary of Defense. Each of the three branches was led by a civilian secretary who reported to the Secretary of Defense. Amendments to the National Security Act in 1949 changed the name of the National Military Establishment to the Department of Defense. Previously, the Army and the Navy operated autonomously from each other. The Army operated the air branch. The Navy had its own department. The Marines had some autonomy from the Navy. The postwar consolidation allowed the military to marshal its resources holistically toward confronting the nuclear threat (USAEC 1997:19; USAEC 2003:3-2, 3-3).

The need to address the postwar nuclear threat and to respond to global defense influenced weapons development and doctrines in both the Air Force and the Navy. The Air Force emerged as the primary military branch responsible for the delivery of nuclear weapons and defense of the nation. The Navy expanded its global presence to provide conventional military support, while also developing technologies that would enable it to respond to a nuclear threat.

The Truman and Eisenhower presidential administrations endorsed increased funding for the Air Force, particularly for long-range strategic bombers (USAEC 1997:16). Eisenhower also favored funding for missile development for the Air Force's Intercontinental Ballistic Missiles (ICBMs) and

the Navy's Submarine Launched Ballistic Missiles (SLBMs) (USAEC 1997:23). Supercarriers were developed that were large enough to support aircraft that carried nuclear weapons (Isenberg 1993:342).

Navy planners envisioned an offensive strategy combining submarine warfare and aerial bombardment, via aircraft carrier, of Russian airfields, depots, factories, shipyards, and bases (Isenberg 1993:130-1). The strategy also maintained an ongoing Naval presence in areas of the world, such as the Mediterranean, where tensions existed between Communist-allied and western-allied groups (Isenberg 1993:134).

3.2.4 Postwar Military Budgets

Although higher than pre-World War II levels, military spending was reduced drastically after the war. President Eisenhower was noted for his fiscal conservatism. When he became president in 1953, Eisenhower cut the previous administration's $50 billion annual military budget to $40 billion, and maintained this level until he left office in 1961 (Isenberg 1963:573). The Air Force, however, received the majority of this funding because of its primary role in addressing the nuclear threat (USAEC 2003:3-3).

Cost-cutting affected the Army more that the Navy, but the Navy struggled to identify its postwar funding requirements as it worked to redefine its mission (Isenberg 1993:81-2). The Navy maintained a global presence, but "around the world, the fleet operated on a relative shoestring, with a true worldwide strategic role seemingly denied by the Air Force and its atomic bomb" (Isenberg 1993:141). In mid-1949, the Navy's global presence included two cruisers, one destroyer squadron, and one small amphibious assault group in the western Pacific; a cruiser and four destroyers supporting the occupation of Japan and Korea; and a carrier, four cruisers, and one or two destroyer squadrons in the Mediterranean.

3.2.5 Size of the Air Force and the Navy

While the size of the armed forces was reduced during the immediate postwar period, personnel numbers were consistently high during the Cold War (USAEC 2003:3-4). The size of the military was reduced from more than 10.7 million personnel in 1945 to approximately 1.3 million in 1947. The personnel level of more than 2 million during the 1950s and 1960s was higher than any peacetime military in U.S. history (U.S. Department of Defense 2004:41). Strength levels further peaked in response to military mobilization during such military actions as Korea and Vietnam.

In 1949, Air Force strength totaled 418,000 (U.S. Senate 1949b:74). Air Force size nearly doubled in 1951, to 788,381, and totaled nearly 1 million by 1955. While the size of the Air Force declined through 1960, the service was close in size to the Army, the branch with the most personnel (U.S. Department of Defense Directorate for Information Operations and Reports n.d.). This personnel strength reflected the Air Force's central role in the U.S. policy to contain Communism through nuclear deterrence.

The size of the Navy was 451,276 in 1949, approximately 20 per cent of its strength in 1946. Following a peak of 824,265 in 1952 during the Korean Conflict, the Navy's strength declined steadily through the 1950s. In 1962, Navy strength was 655,964, and increased throughout the decade (Naval Historical Center 1997). The size of the Marine Corps dropped from 93,053 in 1947 to 74,279 in 1950 (U.S. Marine Corps History and Museums Division 2005). In response to the Korean Conflict, Marine

Table 2. Army Air Forces, Navy, and Marine Corps Personnel Strength 1935-1945

Fiscal Year	Army Air Forces*	Navy	Marine Corps
1935	15,945	95,053	17,260
1936	16,863	106,292	17,248
1937	18,572	113,617	18,223
1938	20,196	119,088	18,356
1939	22,387	125,202	19,432
1940	51,185	215,273	28,345
1941	152,125	383,150	54,539
1942	764,415	1,259,167	142,613
1943	2,197,114	2,381,116	308,523
1944	2,372,292	3,201,755	475,604
1945	2,282,259	3,405,525	474,680

*The Army Air Forces, located within the Army, was the predecessor to the independent Air Force created in 1947
Source: www.usaaf.net, Naval Historical Center, United States Marine Corps History and Museums Division

Table 3. Air Force, Navy, and Marine Corps Personnel Strength 1950-1962

Fiscal Year	Air Force	Navy	Marine Corps
1950	411,277	380,739	74,279
1951	788,381	736,596	192,620
1952	983,261	824,265	231,967
1953	977,593	794,440	249,219
1954	947,918	725,720	223,868
1955	959,946	660,695	205,170
1956	909,958	669,925	200,780
1957	919,835	676,071	200,861
1958	871,156	639,942	189,495
1959	840,435	625,661	175,571
1960	814,752	616,987	170,621
1961	821,151	626,223	176,909
1962	884,025	664,212	190,962

Source: United States Department of Defense, Directorate for Information Operations and Reports

Corps strength was increased. The USMC grew to 192,920 in 1951 and reached a wartime peak of 249,219 in 1953. Staffing levels declined through 1960, only to rise again during that decade in response to the conflict in Vietnam (U.S. Marine Corps History and Museums Division 2005).

3.2.6 Air Force and Navy Family Housing Policies

The Department of Defense recognized the need to provide family housing to a large active-duty military force. Trained, skilled professionals were required to develop and operate military weapons and technology of increased complexity and sophistication. The military competed with private-sector industry to retain highly trained personnel. The military recognized that poor housing conditions were a deterrent to personnel retention and worked to correct these conditions as an inducement to re-enlistment. Most officers and upper-grade enlisted personnel were married and accompanied by dependents, a drastic change from military life in the pre-World War II period. Surveys completed by departing personnel indicated that the lack of adequate family housing was a

primary reason for separating from the service. Departure rates were highest among the most highly skilled personnel (Office of the Secretary of Defense 1961:1-2).

Providing family housing to large numbers of personnel represented a change from family housing policies before World War II. The Army, the home service for many aviators prior to the establishment of the Air Force in 1947, "historically provided officer family housing on permanent installations but did not extend family housing to lower-ranking enlisted personnel" (USAEC 2003:3-5). Indeed, before 1940, enlisted men were discouraged from marrying (USAEC 2003:3-5).

The Navy began to assign ships to home ports in 1905 and added amenities to shipyards to support sailors and their families (Department of Defense 2004:18). Family housing was not, however, extended to enlisted men. After World War II, the Navy extended family housing to all officers and enlisted men assigned to isolated stations, and to key officers and enlisted men at other stations. On 16 September 1948, the Acting Secretary of the Navy directed that annual public works programs identify the family housing needed to implement this policy (Phillips 1948:1-2, 4-5).

3.2.7 Historical Overview of Policies on Marriage, Family, and Social Services

Historically, the armed forces did not accommodate married enlisted personnel or provide services to their families. Married personnel accompanied by families usually were officers; enlisted men did not serve accompanied by wives or children (USAEC 2003:3-5, 3-6).

In the nineteenth-century Navy, both officers and enlisted men primarily lived aboard ships, even while in port. These accommodations did not afford room for families (Fairbanks and Lovelace 1956:18-19).

Formal family support services for enlisted personnel were not available on Army installations in the early twentieth century during the period when the Army developed its first aviation divisions. Schools were not incorporated into installation designs, and military benefits, such as rations and medical care, were not extended to the families of enlisted men (USAEC 2003:3-6).

During World War II, Army policies changed as married people enlisted or were drafted. Nevertheless, military families received minimal support. Before the 1942 Army Emergency Relief Program, Army families facing crises arising from the upheaval of rapid mobilization were addressed informally (USAEC 2003:3-6). Sailors were willing to endure long periods of separation from their families to support the war effort (Zumwalt 1978). After the war, many sailors left the Navy and re-enlistment rates dropped (Zumwalt 1978). Re-enlistment rates rose when personnel were granted two months leave immediately after the war ended (Zumwalt 1978). Admiral Elmo Zumwalt Jr. observed that during peace, many military personnel expressed anger and frustration over limited time spent with their families (Zumwalt 1978).

Candidates for first enlistments in the Navy could not be married, and Navy nurses were unmarried women (Greenleaf and Zeran 1942:16, 20). Single or married men could volunteer for the Army Air Forces as air or ground crew aviation cadets, but these officer candidates were required to submit a signed statement confirming that their dependents had means of support (Greenleaf and Zeran 1942:12, 13). Aviation students, who served as enlisted personnel, could enlist only if they were single, while married enlisted technicians were accepted (Greenleaf and Zeran 1942:14, 15).

During the early 1950s, the ratio of time at sea to time on shore for Navy personnel favored sea assignment. For example, a radarman served 13.6 years at sea for every year of shore duty and machinist mates served 18 years at sea to every two-year tour of shore duty (Zumwalt 1978).

In a 1977 speech delivered at a conference on military family research, Admiral Zumwalt attributed the postwar emphasis on family time to the influence of military wives (Zumwalt 1978). Historically, wife and children were secondary to commitments to the armed services (Kaslow and Ridenour 1984:xiii). Women who married military officers agreed "to become part of the service way of life that revolves around and flows from the man's military obligations and relationships" (Kaslow and Ridenour 1984:xiii).

By the late 1960s, "many more wives than in the earlier years were not going to put up with the continual moving around" that disrupted careers and undermined family and community ties (Zumwalt 1978). Many military spouses contributed to the support of their families and were reluctant to derail careers and uproot children to move to another base. Postwar military working spouses were asked to make greater personal and financial sacrifices than the historical military wife who did not work outside the home (Zumwalt 1978). Those who made the sacrifice "were finding themselves increasingly less enchanted with military careers of their husbands" (Zumwalt 1978). This disenchantment influenced requests for extended shore duty and requests for reassignment (Zumwalt 1978).

The end of the military service draft and the establishment of the all-volunteer military in 1973 forced a re-evaluation of the role of dependents. In order to attract and retain qualified personnel, the military was forced to respond to the needs of military families (Kupchella 1993:242). The military competed with the private sector for qualified, highly trained personnel (Kupchella 1993:242). Changes included expanding career opportunities for women, relaxing policies on women's dependents, and developing more family-oriented programs, such as day-care centers, youth programs, and family advocacy (Kupchella 1993:242).

In 1972, the Navy established a research office to collect research data and to provide rehabilitation and medical care to former prisoners of war and their families. The Family Studies Branch within the Center for Prisoner of War Studies was established to provide assistance to these families (Brown 1978). The Navy convened the first Navy-wide conference on the family in 1978 (Brown 1993:165). The Navy's first Family Service Center opened at Norfolk Naval Base in 1980 (Brown 1993:165).

The Families in Blue, published in 1980, presented the results of a service-wide survey of family life in the Air Force (Brown 1993:165). In spring 1980, the Air Force created the Air Force Office of Family Matters, which sponsored the first Air Force Conference on Families in September 1980 (Brown 1993:165). The first Family Support Center program was established in July 1981 (Brown 1993:165).

3.2.8 Postwar Marriage Rates and Demographics

During the 1950s, the Air Force and the Navy shifted from services staffed predominantly by single men to services staffed predominantly by married personnel accompanied by dependents. In 1955, 85 per cent of Air Force officers and 80 per cent of Navy officers were married (Secretary of Defense 1961:22). The Navy figure represented a dramatic increase over the 1920s, when one in four officers was married. The shift prompted Assistant Secretary of the Navy Albert Pratt to describe the Navy as a "married Navy" (U.S. Senate 1957:1). In addition, the average age at which officers

married declined. Before World War II, Naval officers' average age at marriage was 26; after the war, it was 22 (U.S. Senate 1957:1).

The number of married Air Force enlisted men doubled during the late 1950s, from 20 per cent in 1955 to 40 per cent in 1961. Twenty per cent of enlisted Navy men were married in 1955, while 32 per cent were married in 1961 (Secretary of Defense 1961:22).

Women represented another demographic group in the military of the 1950s. Both the number of women and role that they served in the military had grown steadily during the first half of the twentieth century. Nearly 400,000 women served in the armed forces during World War II, more than the entire male troop strength in 1939 (Women in Military Service for America Memorial Foundation, Inc. n.d.). Women were poised to play a significant and expanded role in the military after the war. The Women's Armed Services Integration Act of 1948 permitted women to serve in all military branches (Women in Military Service for America Memorial Foundation, Inc. n.d.).

However, the cultural norms of the 1950s limited the opportunities available to women. The Integration Act established quotas and limited the number of enlisted women to two per cent of total enlisted strength; female officers further were restricted in number to ten per cent of enlisted female personnel strength. Female officers were prohibited from advancing above the rank of Lieutenant Colonel in the Army and Air Force or above Commander in the Navy (Burrelli 1996:3). In 1951, Executive Order 10240 authorized the armed forces to discharge women who became pregnant, gave birth, or became a parent though adoption (U.S.House of Representatives 2002). "(T)he military offered women far more restrictive opportunities than in World War II. During the 1950s, opportunities for any but traditional job assignments declined significantly. More than half the women worked in 'pink collar' positions such as personnel and administration, and their basic training included stereotypical 'women's' classes such as makeup and etiquette lessons" (Women in Military Service for America Memorial Foundation, Inc. n.d.).

Congress did not redress gender-based limits in the military until 1967, when it repealed the two per cent quota on female enlisted strength. The minimum enlistment age without parental consent was equalized with men in 1974. Women were admitted to the three major service academies in 1976. Other changes made between 1978 and 1994 removed restrictions on duty assignments in the Navy and the Air Force (Burrelli 1996:3).

The armed services did not compile demographic data on personnel and their families during the postwar period. Researchers conducting research on military families as late as the 1990s lamented the lack of demographic data on the armed services. One researcher noted that "there are no DoD-wide standard sources currently available to accurately describe demographic characteristics of military members and their families" (Kupchella 1993:243). The methodologies used to compile the limited available data often conflicted. For example, some studies defined a single parent as a parent with a cohabitating minor dependent, while other defined a single parent as a service member who paid child support (Kupchella 1993:243). The Army, as the armed forces' largest service, was the first to develop a family demographics system in 1990 (Kupchella 1993:243). By the late twentieth century, the military evolved from a predominately single, white male force to a military reflecting cultural diversity in its personnel and dependents (Kupchella 1993:244).

3.2.9 Postwar Air Force and Navy Housing Conditions

In the postwar period, family housing competed for Federal dollars with other operational priorities in military budgets. In a 1951 report on substandard housing and rent gouging, Secretary of

Defense Robert Lovett noted that "the competing demands for operational facilities, for armament, and for other items have usually found high positions in priority, with the result that funds for housing have been relatively meager" (Gilpatric 1951:2-3). The Air Force determined that a total of 121,000 family housing units were needed in 1949. Only 17,954 units were included in the Air Force inventory and 36 per cent, or 6,397 of these units, were substandard. Housing construction did not keep pace with need. The Air Force built 4,318 houses in 1947, none in 1948, and 907 in 1949 (U.S. House of Representatives 1949a:8). A 1951 survey of off-base housing availability near 135 major U.S. Air Force bases found reasonably priced family housing available in sufficient numbers near 12 bases. Near 75 bases, there was either no family housing or extremely limited, expensive housing. Personnel assigned to these bases were advised against bringing their families. At the remaining 48 bases, reasonably priced family housing was limited (U.S. Senate 1951:32-34).

The situation was similar for the Navy. In 1951, 44,000 shore-based Navy personnel required family housing. At that time, the Navy controlled 39,842 temporary low-cost rental units consisting of defense housing, Quonset huts, and trailers. Fourteen thousand of the Navy's low-cost rental units were substandard. The Navy also needed additional family housing at home ports for families of Naval personnel stationed at sea (U.S. House of Representatives1949:13).

The acute housing shortage forced Air Force and Navy personnel to rent substandard housing at exorbitant rents. Personnel could not be assigned to bases and activities without housing, thus affecting the mission. As late as 1951, the housing shortage in Wichita, Kansas was so acute that production of the new B-47 bomber was "seriously delayed" (Gilpatric 1951:5). The Wichita Area Labor-Management Committee and the Kansas City Regional Defense Mobilization Committee requested that the military take immediate action to build several thousand housing units (Gilpatric 1951:5). A Rear Admiral testified to a Senate committee in 1949 that Naval personnel "are occupying accommodations far below acceptable standards – in trailers, tourist cabins, and so forth" (U.S. Senate 1949b:49).

In an Air Force survey conducted in September 1948, 59 per cent of married men reported they intended to re-enlist; positive responses rose to 79 per cent of respondents queried on whether housing would influence their re-enlistment decisions (U.S. Senate 1949b:64). One reason cited for the Navy's housing crisis was the discrepancy between private sector rents and rents enlisted men could afford (U.S. Senate 1949b:54).

The Department of Defense advocated the passage of Federal rent-control legislation to protect service members and defense workers. Under amendments to the Defense Production Act of 1950, the Secretary of Defense and the Director of Defense Mobilization were charged with identifying critical defense housing areas appropriate for government rent controls (Gilpatric 1951:3). During 1951, the services worked with the Federal Office of Rent Stabilization and other Federal agencies to encourage property owners in such communities to provide military family housing. They encouraged property owners to use loans guaranteed through the Federal Housing Administration (FHA) to rehabilitate substandard or vacant housing and to convert large houses or non-residential buildings to multi-family residential use.

Property owners were assisted in determining fair and reasonable rental rates (U.S. Senate 1951:35-38). In 1950, the Navy increased the amount of off-base family housing available for rent near the Camp Lejune Marine Corps base, in North Carolina, by publicizing its housing need through radio and newspaper announcements, speeches to civic organizations, and notifications to real estate agents and local government officials. Within 30 days, 623 vacancies were located (U.S. Senate 1951:90-91).

3.2.9.1 Postwar Housing Conditions in Alaska

During the early postwar period, Alaska was considered a strategic location "in the first line of national defense" ("Development Program of the Alaskan Command" 1949:3). However, Alaska installations consisted mostly of temporary World War II buildings erected to support the wartime mission as layover or launching points. Existing infrastructure could not accommodate the proposed deployment of larger numbers of personnel ("Development Program of the Alaskan Command" 1949:3). Housing shortages in Alaska were particularly acute. Little housing was available on base, and the nearby small towns were unable to provide rental units. In 1948, Ladd AFB, near Fairbanks, had a housing inventory of 133 housing units for 869 families of officers and enlisted men. In addition, 24 units were available for 417 civilian families (Goodyear 1948:1). At Eielson AFB, approximately 25 miles south of Fairbanks, 1,206 family quarters were needed in 1949; none were available. Projections for 1950 and 1951 forecasted that approved construction would reduce the shortage by 241 units ("Construction Plans, Alaskan Command" 1949:4). At the three bases comprising the Alaskan Air Command, the family housing shortage for 1952 was projected at 4,664 units ("Staff Study" 1949:2).

Little housing was available off-base in surrounding towns. Landlords charged exorbitant rates for limited, low-quality housing. For example, in Fairbanks, outside Ladd AFB, a Second Lieutenant and his family rented two rooms of a log cabin for $150 per month, a price that did not include access to water or a bathroom. Often, multiple families shared houses, with common kitchens and bathrooms. Non-residential buildings and structures, such as Quonset huts and GI vehicle crates, were adapted for housing. In addition to excessive rents, landlords also imposed such terms as advance rental payments and curfews (Goodyear 1948:1-11).

High construction costs contributed to the state's housing deficit. Building materials cost 200 to 500 per cent more than in the continental United States (Goodyear 1948:1-11). Utilities, such as water, sewer, and electricity, were not widely available, but were a requisite to new housing. Severe weather conditions necessitated the installation of equipment to heat water and sewer lines to prevent freezing (Cone 1949:1).

The lack of adequate family housing affected military readiness. The housing shortage affected morale as military family members were separated from one another. These effects were noted by the chaplains of Ladd AFB in their support for the installation of 100 trailers on the base in 1948. Wing Chaplain William E. Powers wrote: "This separation of husbands from wives and fathers from their children is beginning to eat cancer-like into the fiber of the foundation of our nation — the home" (Powers 1948:1).

Among the supporting documentation for the 1948 Ladd trailer proposal was a resignation letter submitted by the general manager of the base exchange. This letter read, in part, "It was my sincere desire that I could fulfill the terms of the contract and particularly at Ladd A.F.B. Exchange which offers a challenge to one's ability, but due to apparently uncontrollable circumstances, especially as applying to quarters for my wife and myself on the post, I feel I could not justifiably subject her to the undesirable, outrageously priced housing facilities offered in the city of Fairbanks" (Henry 1948).

The family housing deficiency also affected troop deployment to Alaska, especially for enlisted personnel. Existing bachelor officer quarters generally could accommodate married officers in accordance with guidelines allowing temporary overcrowding. However, at Ladd AFB and Fort Richardson, existing barracks could not house all married enlisted men, forcing the installations to

resort to substandard, temporary construction. Thus, the number of personnel approved for deployment could not be housed ("Construction Plans, Alaskan Command" 1949:5-6).

3.2.10 Postwar Air Force and Navy Pay Rates and Basic Allowance for Quarters

3.2.10.1 Pay Rates

Monthly pay was based on grade and years of service. In the immediate postwar period, Congress noted that while sections of the military pay structure had been adjusted during the twentieth century, an overall realignment had not been made for more than 40 years. Lawmakers sought to revise technical provisions of the pay system and to increase pay scales. Congress hoped "to establish for the uniformed services a compensation pattern which will tend to attract and retain first-class personnel in the armed services" (U.S. Senate 1949a:2089-91).

In April 1949, pay for enlisted personnel ranged from $75 for a private with less than three years experience to $247.50 for a master sergeant with more than 30 years experience. For warrant officers, pay ranged from $180 for those with less than three years experience, to $412.50 for a chief warrant officer with more than 30 years experience. Officer pay ranged from $180 for a second lieutenant with less than five years experience to $733.33 for a General with more than 30 years experience (U.S. Senate 1949b:66-67) (Table 4).

Later that year, the Career Compensation Act of 1949 increased the monthly pay scale. For enlisted personnel, the new scale ranged from $75 for the lowest grade with less than four months experience to $294 for the highest grade with more than 30 years experience. Warrant officers received a range of $210.98 for the lowest grade with less than two years experience to $465.60 for the highest grade with more than 30 years experience. Commissioned officers received $213.75 for the lowest grate with less than two years experience to $954.75 for the highest grade with more than 30 years experience (U.S. Public Law 351 1949:819-820).

Amendments to the Career Compensation Act in 1958 increased basic pay for all grades based on years of service. The pay scale for enlisted personnel ranged from $78 for less than four months of service at the lowest grade to $440 for more than 30 years of service at the highest grade. Warrant officers were paid $219.42 for less than two years of service at the lowest grade to $595 for over 30 years of service at the highest grade. For commissioned officers, pay ranged from $222.30 for less than two years of service at the lowest grade to $1,700 for more than 30 years of service at the highest grade (U.S. Public Law 85-422 1958:148-150). Table 5 compares pay rates authorized in the Career Compensation Act of 1949 with the 1958 amendments.

3.2.10.2 Quarters Allowances

The Career Compensation Act of 1949 authorized a basic allowance for quarters commensurate with pay grade and existence of dependents. The first three grades of enlisted personnel and grade four personnel with less than seven years of service received $45, regardless of dependents. The quarters allowance for grade four enlisted personnel with more than seven years' experience and the top three enlisted grades was $45 without dependents and $67.50 with dependents. Quarters allowances ranged from $60 without dependents and $75 with dependents for first-grade warrant and commissioned officers to $82.50 without dependents and $105 with dependents for fourth grade warrant and commissioned officers. For the top four grades of commissioned officers, quarters allowances ranged from $90 without dependents and $120 with dependents for grade five officers to

Table 4. Postwar Monthly Pay Rates, April 1949

Pay Grade	Under 3 Years (base)	Over 3 Years	Over 6 Years	Over 9 Years	Over 12 Years	Over 15 Years	Over 18 Years	Over 21 Years	Over 24 Years	Over 27 Years	Over 30 Years
COMMISSIONED OFFICERS											
General	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33	$733.33
Lt. General	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33
Major General	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33	733.33
Brigadier General	550.00	550.00	550.00	550.00	550.00	550.00	550.00	550.00	550.00	550.00	550.00
Colonel	366.67	385.00	403.33	421.67	440.00	458.33	476.67	495.00	513.33	531.67	550.00
Lt. Col. over 30 years	550.00	--	--	--	--	--	--	--	--	--	550.00
Lt. Col. under 30 years	320.83	336.87	352.92	368.96	385.00	401.04	417.08	433.12	449.17	465.21	--
Major over 23 years	433.12	--	--	--	--	--	--	--	449.17	465.21	481.25
Major under 23 years	275.00	288.75	302.50	316.25	330.00	343.75	357.50	371.25	--	--	--
Captain over 17 years	343.75	--	--	--	--	--	357.50	371.25	385.00	398.75	412.50
Captain under 17 years	230.00	241.50	253.00	264.50	276.00	287.50	--	--	--	--	--
1st Lt. over 10 years	264.50	--	--	--	276.00	287.50	299.00	310.50	322.00	333.50	345.00
1st Lt. under 10 years	200.00	210.00	220.00	230.00	--	--	--	--	--	--	--
2nd Lt. over 5 years	210.00	--	220.00	230.00	240.00	250.00	260.00	270.00	280.00	290.00	300.00
2nd Lt. under 5 years	180.00	189.00	--	--	--	--	--	--	--	--	--
WARRANT OFFICERS											
Chief/commissioned over 20 years	$357.50	--	--	--	--	--	--	$371.25	$385.00	$398.75	$412.50
Chief/commissioned over 10 years	264.50	--	--	--	$276.00	$287.50	$299.00	310.50	322.00	333.50	345.00
Chief/commissioned	210.00	220.50	231.50	241.50	252.00	262.50	273.00	283.50	294.00	304.50	315.00
Junior/warrant officer	180.00	189.00	198.00	207.00	216.00	225.00	234.00	243.00	252.00	261.00	270.00
ENLISTED PERSONNEL											
Master sergeant	$165.00	$173.25	$181.50	$189.75	$198.00	$206.25	$214.50	$222.75	$231.00	$239.25	$247.50
Technical sergeant	135.00	141.75	148.50	155.25	162.00	168.75	175.50	182.25	189.00	195.75	202.50
Staff sergeant	115.00	120.75	126.50	132.25	138.00	143.75	149.50	155.25	161.00	166.75	172.50
Sergeant	100.00	105.00	110.00	115.00	120.00	125.00	130.00	135.00	140.00	145.00	150.00
Corporal	90.00	94.50	99.00	103.50	108.00	112.50	117.00	121.50	126.00	130.50	135.00
Private 1st class	80.00	84.00	88.00	92.00	96.00	100.00	104.00	108.00	112.00	116.00	120.00
Private	75.00	78.75	82.50	86.25	90.00	93.75	97.50	101.25	105.00	108.75	112.50

Source: U.S. Senate 1949b:66-69

Table 5. Monthly Pay Rates in Career Compensation Act of 1949 and 1958 Amendments, by Years of Service

Pay Grade	Under 2 Years		Over 2 Years		Over 3 Years		Over 4 Years		Over 6 Years		Over 8 Years		Over 10 Years	
	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958
COMMISSIONED OFFICERS														
O-10	--	$1,200.00	--	$1,250.00	--	$1,250.00	--	$1,250.00	--	$1,250.00	--	$1,300.00	--	$1,300.00
O-9	--	1,063.30	--	1,100.00	--	1,122.00	--	1,122.00	--	1,122.00	--	1,150.00	--	1,150.00
O-8	$926.25	963.30	$926.25	1,000.00	--	1,022.00	$926.25	1,022.00	$926.25	1,022.00	$926.25	1,100.00	$926.25	1,100.00
O-7	769.50	800.28	769.50	860.00	--	860.00	769.50	860.00	769.50	900.00	769.50	900.00	769.50	950.00
O-6	570.00	592.80	570.00	628.00	--	670.00	570.00	670.00	570.00	670.00	570.00	670.00	570.00	670.00
O-5	456.00	474.24	456.00	503.00	--	540.00	456.00	540.00	456.00	540.00	456.00	540.00	456.00	560.00
O-4	384.75	400.14	384.75	424.00	--	455.00	384.75	455.00	384.75	465.00	399.00	485.00	413.25	520.00
O-3	313.50	326.04	313.50	346.00	--	372.00	327.75	415.00	342.00	440.00	356.25	460.00	370.50	480.00
O-2	249.38	259.36	263.63	291.00	--	360.00	277.88	370.00	292.13	380.00	306.38	380.00	320.63	380.00
O-1	213.75	222.30	228.00	251.00	--	314.00	242.25	314.00	256.50	314.00	270.75	314.00	285.00	314.00
WARRANT OFFICERS														
W-4	$320.10	$332.90	$320.10	$376.00	--	$376.00	$320.10	$383.00	$334.65	$399.00	$349.20	$416.00	$363.75	$435.00
W-3	291.00	302.64	291.00	343.00	--	343.00	291.00	348.00	298.28	353.00	305.55	380.00	312.83	398.00
W-2	254.63	264.82	254.63	298.00	--	298.00	254.63	307.00	254.63	328.00	261.90	342.00	269.18	355.00
W-1	210.98	219.42	210.98	266.00	--	266.00	210.98	285.00	218.25	299.00	225.53	313.00	232.80	334.00
ENLISTED PERSONNEL														
E-9	--	--	--	--	--	--	--	--	--	--	--	--	--	$380.00
E-8	--	--	--	--	--	--	--	--	--	--	--	$310.00	--	320.00
E-7	$198.45	$206.39	$198.45	$236.00	--	$236.00	$205.80	$250.00	$213.15	$260.00	$220.50	270.00	$227.85	285.00
E-6	169.05	175.81	169.05	200.00	--	200.00	176.40	225.00	183.75	235.00	191.10	245.00	198.45	255.00
E-5	139.65	145.24	147.00	180.00	--	180.00	154.35	205.00	161.70	210.00	169.05	220.00	176.40	240.00
E-4	117.60	122.30	124.95	150.00	--	160.00	132.30	170.00	139.65	180.00	147.00	190.00	154.35	190.00
E-3	95.55	99.37	102.90	124.00	--	124.00	110.25	141.00	117.60	141.00	124.95	141.00	132.30	141.00
E-2	82.50	85.80	90.00	108.00	--	108.00	97.50	108.00	105.00	108.00	112.50	108.00	120.00	108.00
E-1 (over 4 months)	80.00	83.20	87.50	105.00	--	105.00	95.00	105.00	95.00	105.00	95.00	105.00	95.00	105.00
E-1 (under 4 months)	75.00	78.00	--	--	--	--	--	--	--	--	--	--	--	--

Pay Grade	Over 12 Years		Over 14 Years		Over 16 Years		Over 18 Years		Over 20 Years		Over 22 Years		Over 26 Years		Over 30 Years	
	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958	1949	1958
COMMISSIONED OFFICERS																
O-10	--	$1,400.00	--	$1,400.00	--	$1,500.00	--	$1,500.00	--	$1,600.00	--	$1,600.00	--	$1,700.00	--	$1,700.00
O-9	--	1,200.00	--	1,200.00	--	1,300.00	--	1,300.00	--	1,400.00	--	1,400.00	--	1,500.00	--	1,500.00
O-8	$926.25	1,150.00	$926.25	1,150.00	$926.25	1,200.00	$926.25	1,250.00	--	1,300.00	$926.25	1,350.00	$926.25	1,350.00	$926.25	1,350.00
O-7	769.50	950.00	769.50	1,000.00	769.50	1,100.00	769.50	1,175.00	--	1,175.00	769.50	1,175.00	798.00	1,175.00	826.50	1,175.00
O-6	570.00	670.00	570.00	690.00	584.25	800.00	612.75	840.00	--	860.00	641.25	910.00	669.75	985.00	698.25	985.00
O-5	470.25	590.00	484.50	630.00	498.75	680.00	527.25	720.00	--	745.00	555.75	775.00	584.25	775.00	584.25	775.00
O-4	427.50	550.00	441.75	570.00	456.00	610.00	484.50	630.00	--	630.00	498.75	630.00	513.00	630.00	513.00	630.00
O-3	384.75	510.00	399.00	525.00	413.25	525.00	427.50	525.00	--	525.00	441.75	525.00	441.75	525.00	441.75	525.00
O-2	334.88	380.00	349.13	380.00	349.13	380.00	349.13	380.00	--	380.00	349.13	380.00	349.13	380.00	349.13	380.00
O-1	299.25	314.00	313.50	314.00	313.50	314.00	313.50	314.00	--	314.00	313.50	314.00	313.50	314.00	313.50	314.00
WARRANT OFFICERS																
W-4	$378.30	$465.00	$392.85	$486.00	$407.40	$504.00	$421.95	$516.00	--	$528.00	$436.50	$543.00	$451.05	$575.00	$465.60	$595.00
W-3	320.10	412.00	327.38	427.00	334.65	441.00	349.20	458.00	--	470.00	363.75	487.00	378.30	506.00	392.85	506.00
W-2	276.45	369.00	283.73	381.00	291.00	393.00	305.55	406.00	--	417.00	320.10	440.00	334.65	440.00	349.20	440.00
W-1	240.08	345.00	247.35	354.00	254.63	364.00	269.18	375.00	--	390.00	283.73	390.00	298.28	390.00	298.28	390.00
ENLISTED PERSONNEL																
E-9	--	$390.00	--	$400.00	--	$410.00	--	$420.00	--	$430.00	--	$440.00	--	$440.00	--	$440.00
E-8	--	330.00	--	340.00	--	350.00	--	360.00	--	370.00	--	380.00	--	380.00	--	380.00
E-7	$235.20	300.00	$242.55	310.00	$249.90	325.00	$264.60	340.00	--	350.00	$279.30	350.00	$294.00	350.00	$294.00	350.00
E-6	205.80	265.00	213.15	275.00	220.50	280.00	235.20	290.00	--	290.00	249.90	290.00	249.90	290.00	249.90	290.00
E-5	183.75	240.00	191.10	240.00	198.45	240.00	213.15	240.00	--	240.00	227.85	240.00	227.85	240.00	227.85	240.00
E-4	161.70	190.00	169.05	190.00	176.40	190.00	191.10	190.00	--	190.00	191.10	190.00	191.10	190.00	191.10	190.00
E-3	139.65	141.00	147.00	141.00	147.00	141.00	147.00	141.00	--	141.00	147.00	141.00	147.00	141.00	147.00	141.00
E-2	120.00	108.00	120.00	108.00	120.00	108.00	120.00	108.00	--	108.00	120.00	108.00	120.00	108.00	120.00	108.00
E-1	95.00	105.00	95.00	105.00	95.00	105.00	95.00	105.00	--	105.00	95.00	105.00	95.00	105.00	95.00	105.00

Source: U.S. Public Law 351, U.S. Public Law 85-422

$120 without dependents and $150 with dependents for grade eight officers (U.S. Public Law 351 1949:826).

Amendments to the Career Compensation Act in 1958 increased the rates for warrant and commissioned officers. The increased basic allowance for quarters ranged from $68.40 without dependents and $85.50 with dependents for grade one warrant and commissioned officers, to $94.20 without dependents and $119.70 with dependents for grade four warrant and commissioned officers. The top six grades of commissioned officers ranged from $102.60 without dependents and $136.80 with dependents for grade five officers to $136.80 without dependents and $171 with dependents (U.S. Public Law 85-422 1958:155). Table 6 compares quarters allowances authorized in the Career Compensation Act of 1949 with the 1958 amendments.

Table 6. Quarters Allowances, 1949 and 1958

Pay Grade	With Dependents		Without Dependents	
	1949	1958	1949	1958
COMMISSIONED OFFICERS				
O-10	--	$171.00	--	$136.80
O-9	--	171.00	--	136.80
O-8	$150.00	171.00	$120.00	136.80
O-7	150.00	171.00	120.00	136.80
O-6	120.00	136.80	105.00	119.70
O-5	120.00	136.80	90.00	102.60
O-4	105.00	119.70	82.50	94.20
O-3	90.00	102.60	75.00	85.50
O-2	82.50	94.20	67.50	77.10
O-1	75.00	85.50	60.00	68.40
WARRANT OFFICERS				
W-4	$105.00	$119.70	$82.50	$94.20
W-3	90.00	102.60	75.00	85.50
W-2	82.50	94.20	67.50	77.10
W-1	75.00	85.50	60.00	68.40
ENLISTED PERSONNEL				
E-9	--	$67.50	--	$45.00
E-8	--	67.50	--	45.00
E-7	67.50	67.50	45.00	45.00
E-6	67.50	67.50	45.00	45.00
E-5	67.50	67.50	45.00	45.00
E-4 (7 or more years service)	67.50	67.50	45.00	45.00
E-4 (less than 7 years service)	45.00	45.00	45.00	45.00
E-3	45.00	45.00	45.00	45.00
E-2	45.00	45.00	45.00	45.00
E-1	45.00	45.00	45.00	45.00

Source: U.S. Public Law 351, U.S. Public Law 85-422

3.2.11 Overview of Air Force and Navy Family Housing – 1790 to 1949

The history of Air Force and Navy construction and policies related to family housing influenced the development and implementation of solutions to the postwar housing shortage. The Air

Force shares the Army history of family housing. Numerous permanent quarters were constructed for the Army Air Corps during the inter-war period. Prior to World War II, the Army Quartermaster Corps oversaw all construction on Army installations. At the beginning of World War II, all construction responsibilities for the Army and the Army Air Corps were transferred to the Army Corps of Engineers.

The Navy traditionally focused its resources upon ships at sea. These ships were manned by sailors who were not provided on-shore military quarters. The Navy maintained few on-shore installations prior to the twentieth century. Married senior officers generally occupied quarters at on-shore installations. Marine Corps personnel traditionally were housed in compounds located at Naval installations. Marine Corps compounds typically included one barracks and three to five officer quarters. The Bureau of Yards and Docks oversaw construction of Navy and Marine Corps installations.

During the twentieth century, the Air Force, Navy, and Marine Corps experienced major personnel increases and assumed expanded permanent duties in the United States military establishment. As a result, an increased number of personnel required training and occupied larger and larger permanent military installations. Long-term personnel frequently were married and accompanied by families. The number of family quarters constructed at permanent installations increased particularly after World Wars I and II.

3.2.11.1 Air Force Housing History

The Air Force traces its family housing history in the pre-World War II period to the Army; the majority of military aviation was under the command of the Army prior to the creation of Air Force as an independent service in 1947. The earliest airfields were located at established Army installations. The first permanent installation established solely to support aviation activities was Langley AFB in 1916. When the United States entered World War I on 6 April 1917, the Aviation Section included 65 officers (35 of whom were pilots), 1,087 enlisted personnel, and fewer than 300 aircraft (Glines 1980:72). During the war, the number of airfields built for personnel training expanded substantially and generally contained temporary mobilization buildings.

The Air Corps Act of 2 July 1926 officially established the Air Corps as a separate organization within the Army. The new corps functioned as an air service to support ground forces and national air defense (Maurer 1987:73ff). The act authorized personnel levels at 1,650 officers, 16,000 enlisted men, and 2,500 cadets. The number of aircraft authorized by the act was 1,800 (Brown 1990:73; Glines 1980:122; War Department 1926:34). In 1926, the Air Service comprised 919 officers and 8,725 enlisted personnel (Glines 1980:122). The total aircraft strength stood at 1,254 planes (Glines 1980:122; Maurer 1987:196). The expanded force authorized by the act was to be implemented by 1931.

The expanding role of the corps necessitated new permanent facilities (Brown 1990:73-74). In 1927, the Chief of the Air Corps proposed constructing two new airfields and expanding 32 existing fields. The primary types of installations proposed for expansion were training bases located in warm weather regions, making possible year-round flying, and bases supporting the national air defense program. The national air defense program consisted of two wings: one based on the West Coast and one based on the East Coast. A bombardment and pursuit group of three squadrons composed each proposed wing. Additional air defense units were stationed in the central region of the United States to allow rapid deployment to either coast (Maurer 1987:196-197). The implementation of this program required new permanent installations with housing for airmen and officers.

Funding for the new Air Corps installations came from two sources: Congressional appropriations and the Military Post Construction Fund. Congressional appropriations for the Air

Corps between 1927 and 1932 primarily were spent to construct hangars, landing fields, and operations support buildings. Money to construct barracks, housing, and hospitals came from the Military Post Construction Fund. This fund was established under Public Law 45 passed in 1926, which authorized the Secretary of War to dispose of 43 military installations or portions thereof to finance the fund. The fund was dedicated to improving living conditions on Army posts through the construction of permanent buildings. Improvements to military housing were planned for installations in the United States, Hawaii, and the Panama Canal Zone. The program was designed to fund improvements over a ten-year period and was estimated at $110 million (U.S. House of Representatives 1927:7).

At the beginning of the construction program, only Langley Field in Virginia, and Crissy and Rockwell Fields in California, had permanent buildings, including housing. All other Air Corps installations comprised temporary construction dating from World War I. In 1927, Assistant Secretary of War Trubee Davison expressed the Air Corps' critical needs for better housing.

> I found that much of the Air Corps personnel is housed in temporary structures, built during the war with an anticipated life at the time of construction not in excess of five years. That time has long since passed, and these structures, providing as they do very poor quarters at best, have been maintained as well as possible by the expenditure of sums for repairs out of all proportion to the value of the buildings. While I realize that this condition is general in the Army, the Air Corps, however, is peculiarly placed because, [of its] having grown up entirely during the war…(War Department 1927:44)

The Army Quartermaster Corps oversaw all Army and Air Corps construction during the inter-war period. Led by Major General B.F. Cheatham, Quartermaster General, the Construction Division of the Quartermaster Corps, employed a group of distinguished professionals, both uniformed and civilian, to apply the latest theories in city planning to installation planning. Lt. Col. Francis B. Wheaton served as the first Chief of the Engineering Division in the Construction Service. Luther M. Leisenring, formerly associated with prominent architect Cass Gilbert, served as Supervising Architect in the Office of the Quartermaster General in 1937. George B. Ford, a noted urban planner, was retained by the Quartermaster Corps to review installation plans. The goal of the professional team was to develop efficient, cohesive, and pleasant environments within reasonable budgets (Ford 1929:19).

The new permanent installations constructed during the inter-war period were larger and accommodated more personnel than installations constructed during previous military construction periods. More officers and non-commissioned officers (NCOs) required housing. Installation designs grew more complex in order to incorporate the requirements of new technologies, such as aviation. The designs of the new installations were planned to be harmonious with the natural surroundings, while affording functionality. The new installation designs maximized the use of open space near public areas of the post, while integrating irregular street patterns where appropriate. Ford acknowledged that use for aviation had an impact on post design. Development patterns seen from the air were reviewed to ensure attractive post plans (Ford 1929:19-22; Nurse 1928:14-16).

While the parade ground had been center of the traditional Army post, the flightline was the functional center of activity for new Air Corps installations. The placement of the flightline dictated the location of other functional areas, including housing. At Langley Field, family housing was sited south of the airfield. The houses were sited in rectangular blocks and were arranged by rank (Figure 1). By the mid-1920s, Air Corps installations adopted a triangular plan based on a square mile. The flightline was placed on the diagonal of the square with support buildings defining the edge of the

flightline. The plan of Barksdale AFB, Louisiana, illustrated this layout (Figure 2). Barksdale AFB had a central boulevard leading to the flightline from which radiated streets lined with housing. The most dramatic plan for an Air Corps installation was developed for Randolph Field, now Randolph AFB, Texas (Figure 3). Randolph AFB was designed as a training base and had four active flightlines. The administrative and housing areas were sited in the center of the installation. The design for Randolph AFB was attributed to a young Air Corps officer, Harold Clark, who presented it for approval to Brigadier General Lahm (Manning 1987).

Housing constructed during the inter-war period generally reflected designs and floor plans found in civilian construction, particularly the single-family house plans promulgated during the 1920s (Loizeaux reprint 1992). Single-family houses were preferred for officers and NCOs, although duplexes and four-family apartment buildings also were constructed. Spending caps were set by Congress to limit costs of officer housing. Allowable costs for housing construction ranged from $14,500 for dwellings occupied by those above the rank of Captain; to $12,500 for units occupied by those holding the rank of Captain and below; to $5,000 to $7,000 for NCOs (U.S. House of Representatives 1927:31).

Standardized plans for houses were revised to reflect cost considerations and contemporary designs. The house plans were designed to respond to local climates and to reflect local architectural history. The Georgian Colonial Revival Style was used for installations from New England to Virginia, in the Midwest, and in the Pacific Northwest (Figure 4). Spanish Colonial Revival styles were employed in the South, Western Plains, Southwest, and California (Figure 5). Other regional designs were constructed at specific installations, such as the English Tudor Revival Style at Langley AFB and Wright-Patterson AFB and the French Provincial Style at Barksdale AFB (Wheaton 1928:10-13; Lamb 1932:35).

Floor plans and house sizes reflected the military organizational hierarchy. Company officers (e.g., Captains and below) were allotted a living room, dining room, kitchen, three bedrooms, two baths where possible, a maid's room and bath, closets, and storage space. Field and general officers were allowed an additional bedroom and a second bathroom. NCO housing contained a living room, kitchen, two bedrooms, a bathroom, closets, and storage space (Grashof 1986, v.1:48-53).

By 1931, the Army's permanent construction program provided housing for 292 commissioned officers, 304 NCOs, and 19,800 enlisted personnel. Housing provided at Air Corps installations was included in those totals. The program cost more than $30 million, and projects totaling an additional $16 million were under contract. During the 1930s, additional construction funds became available under the National Industrial Recovery Act of 1933, the Work Relief and Public Works Appropriations Act of 1938, and the Public Works Administration. This money was spent for permanent construction on 64 installations, including 1,091 sets of quarters. Air Corps installations where family quarters were constructed included: Maxwell Field, Alabama; March, Hamilton, McClellan, and Moffett Fields, California; Lowry Field, Colorado; MacDill and Chapman Fields, Florida; Chanute and Scott Fields, Illinois; Barksdale Field, Louisiana; Westover Field, Massachusetts; Selfridge Field, Michigan; Mitchel Field, New York; Wright Field, Ohio; Kelly, Brooks, and Randolph Fields, Texas; Langley Field, Virginia; McChord Field, Washington; and, Bolling Field, Washington, D.C. (Craven and Cate 1983:122; "Building for Defense" 1940:39).

The inter-war housing program officially ended on 15 June 1940, when the War Department halted all new construction of permanent buildings including family quarters and began to construct temporary mobilization buildings in preparation for possible war. A few family housing construction projects already in the planning stages were completed in the second half of 1940, notably at several Air

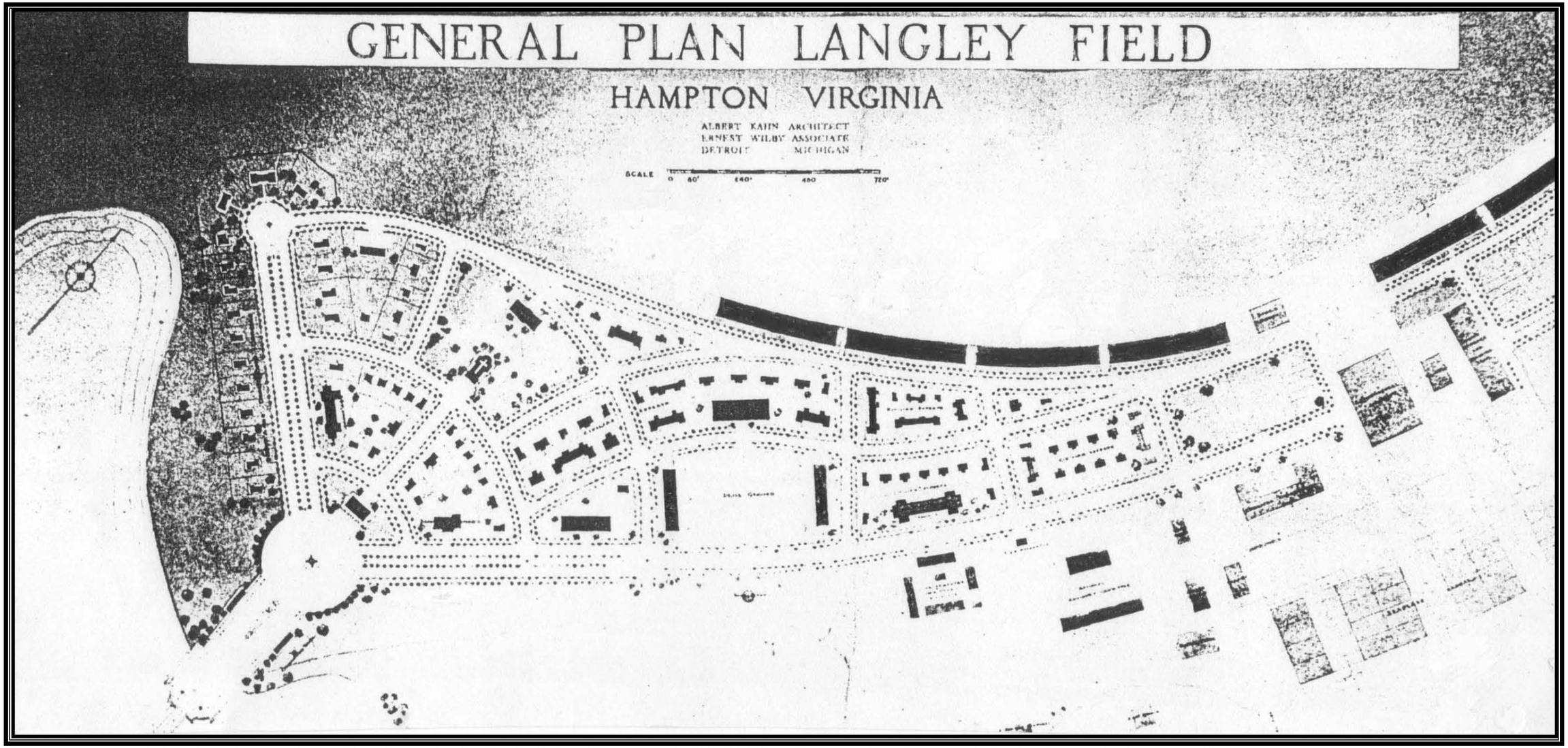


Figure 1. 1917 general plan of Langley AFB designed by Albert Kahn showing family housing areas south of the flightline. (Courtesy of Headquarters Air Combat Command, Historian's Office)

Figure 2. Ca. 1932 Photograph of Barksdale AFB, Louisiana (Courtesy of Barksdale AFB, Louisiana)

Corps depots, where streamlined, Moderne or International Style designs were introduced (Figure 6). These last designs before the start of World War II were a preview of the more minimalist designs favored during the postwar years.

A major shift in the organization of Air Corps construction occurred in spring 1941, when the Army Corps of Engineers assumed oversight of construction at Air Corps installations. The Army Corps of Engineers was assigned responsibility for all Army construction in November 1941 (Whelan et al 1997:33).

Under the protective mobilization stage that preceded World War II, the Army Corps of Engineers oversaw construction of numerous new aviation installations established in response to changing mobilization plans. By November 1941, aviation needs identified in war plans required 54 combat groups totaling 136,000 personnel. By the end of 1943, the Army Air Forces flew out of 345 main bases, 116 sub-bases, and 322 auxiliary fields in the United States (Office of Statistical Control 1945; USAEC 2001:50). Most of the new installations were training bases and were constructed using temporary mobilization buildings. As training needs decreased in 1943 and 1944, General Hap Arnold issued an order in February 1944 prohibiting all new construction in the continental United States without his personal approval (Webster et al. 1999:4-13).

In summary, housing constructed at Air Corps installations prior to World War II was funded primarily through the sale of excess property, Federal appropriations, or emergency spending measures enacted during the Great Depression. The Quartermaster Corps, and later the Army Corps of Engineers, oversaw design and construction of housing. Family housing was provided only to married officers and non-commissioned officers. Enlisted personnel were assigned to barracks. "Supplemented by the

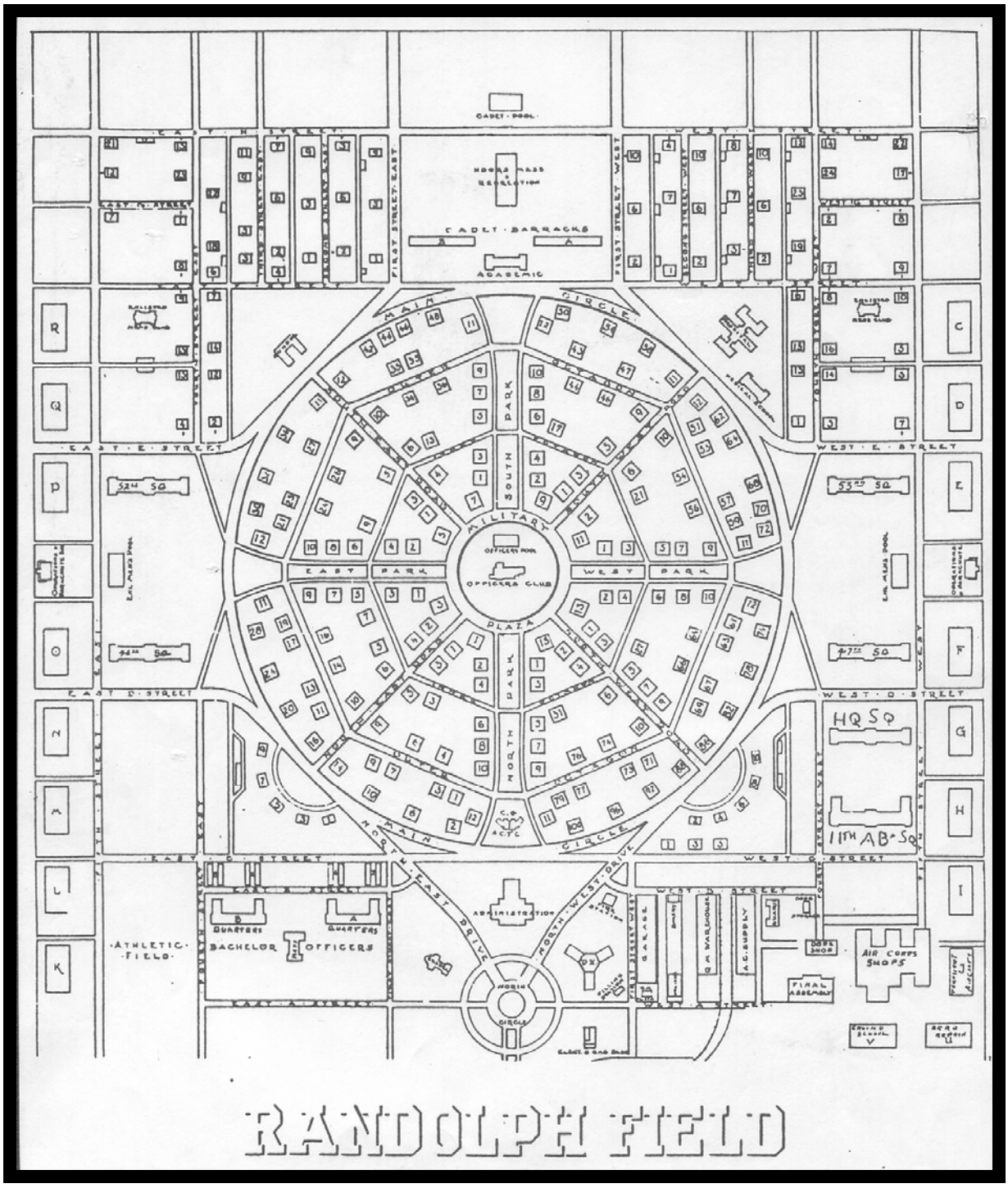


Figure 3. 1928 Plan of Randolph Field (now Randolph AFB), Texas. (U.S. Army Corps of Engineers 1995).

Figure 4. 1935 Georgian Colonial Revival officer quarters at Selfridge Air National Guard Base, Michigan. (Photo taken by RCG&A)

Figure 5. 1934 Spanish Mission Revival officers quarters at Randolph AFB, Texas. (Photo taken by RCG&A)

Figure 6. 1940 officers quarters at Kelly AFB, Texas. (Photo taken by RCG&A)

plentiful supply of private housing, these quarters [constructed during the inter-war period] were adequate to accommodate the small per centage of married men who served in the armed forces of the 1930s" stated the 1957 report of a Senate committee that studied military family housing (Senate 1957:4).

3.2.11.2 Navy and Marine Corps Housing History

The modern Navy traces its formal organization following the Revolutionary War to the Naval Act of 1794, which authorized the construction of six frigates. The act, however, did not authorize the Navy to acquire on-shore facilities to build the frigates. Subsequent funding appropriations were used to establish the Navy's first on-shore installations. By 1802, the Navy owned six shipyards at the following major ports: Washington, D.C.; Portsmouth, New Hampshire; Charlestown near Boston, Massachusetts; Brooklyn, New York; Philadelphia, Pennsylvania; and, Gosport south of Norfolk, Virginia. The acreage of the entire inventory of Naval shore installations totaled 150 acres (Fairbanks and Lovelace 1956:18-21). By 1860, four additional Naval shipyards had opened: Sacketts Harbor on Lake Ontario, New York, in 1809; Pensacola, Florida, in 1825; Memphis, Tennessee, in 1843; and Mare Island, California, in 1853. The shipyards were primarily industrial facilities to build and repair ships, and to warehouse supplies, particularly in isolated areas, as in the case of the shipyards located at Pensacola, Florida, and Mare Island, California.

Throughout the nineteenth century, the size of the Navy generally numbered under 10,000 officers and enlisted men (Naval Historical Center ca. 1997). Most Navy personnel were stationed on shipboard and not quartered on land. The only quarters provided by the Navy were for senior officers in charge of shipyards or other installations, such as Naval hospitals or the Naval observatory. Shipyard workers were generally civilians who lived in nearby urban areas in cases where shipyards were located near major port cities.

Nineteenth- and early twentieth-century Navy installations typically had few public quarters to house senior officers, such as the Commandant and perhaps a few other senior officers. Officer quarters were located either next to the Commandant's house or near the activity supervised by the resident officer. For example, quarters might be constructed for the surgeon near a Navy hospital. The Navy typically did not employ standardized plans for quarters. Though building designs sometimes were repeated at an installation, identical designs were not constructed at different installations. Nineteenth-century Naval officer family housing often was comparable to high-style architecture found in civilian residential design from the same period. Federal or Greek Revival architectural styles were constructed at Navy shipyards during the first half of the nineteenth century. The Commandant's house at the Washington Navy Yard in the District of Columbia is a brick Federal Style house constructed in 1804 (Figure 7). At the Norfolk Navy Yard, Virginia, three senior officers quarters were built between 1827 and 1837; the Flemish-bond brick houses include simple, Greek Revival detailing. The Norfolk quarters were designated for the Commandant, Master Commandant, and Surgeon. Family quarters included all essential rooms and furniture (Fairbanks and Lovelace 1956:18). At shipyards with multiple officer housing, quarters typically were sited in a line along a street at the periphery of the industrial area.

The Marine Corps was established following Congressional passage of the Marine Corps Act of 1798. This act authorized a force of 33 officers and 832 enlisted men. Marines served on ships to maintain discipline and to suppress mutiny among sailors; they also served in landing parties and in close combat situations. One duty of the Marines was to protect on-shore Navy property, such as shipyards. Typically, each shipyard had a Marine barracks. The Marine barracks was a complex of buildings with a barracks to house enlisted Marines and a few individual officer quarters (U.S. Army Corps of Engineers [USACE], Baltimore District 1995:vol 1:18). The Marine Corps Commandant's house constructed in 1801 at the Marine Corps Barracks in Washington, D.C., is the oldest Marine Corps officer quarters in the United States (Figure 8). The house was constructed in the Federal Style and features a symmetrical facade, arched door surround with fanlight, and cornice molding; a mansard roof was added in 1891. Few other examples of nineteenth-century Marine Corps officers quarters survive (USACE 1995: vol 2:373ff).

In 1842, the Navy was organized into bureaus. The Bureau of Yards and Docks assumed responsibility for all construction at shore installations for the Navy and the Marine Corps (Fairbanks and Lovelace 1956:18). Throughout the nineteenth century, both the Navy and the Marine Corps continued to construct limited numbers of quarters for senior officers using a variety of contemporary popular architectural styles. At Pensacola Navy Yard, Florida, the 1874 Commandant's Quarters exhibited Italianate ornamentation. The Naval War College President's House at Newport, Rhode Island, constructed in 1896, was an example of Colonial Revival design. At the new Puget Sound Navy Yard, Washington, the wood-frame officer quarters exhibited Neoclassical detailing (Figure 9). The Navy also began to construct duplex and multi-family housing by the end of the nineteenth century (USACE 1995: Vol 2:373ff). Four sets of Warrant Officer quarters constructed in 1871 at Portsmouth Naval Shipyard, New Hampshire, were contained in a two-story building. Each dwelling had a parlor, a dining room, a kitchen and a laundry on the first floor and a single chamber measuring 13 by 13 feet on the second floor. Bathrooms were included in family housing units a few years later (Fairbanks and Lovelace 1956:18-19). Construction at Navy installations occurred as needed, so that shipyards established during the nineteenth century do not necessarily exhibit a cohesive architectural style. Housing constructed at a Navy yard could represent many architectural styles from many time periods.

In 1899, the Navy instituted a policy to provide officers of Navy ships with on-shore quarters or with a monetary allowance for housing. In 1908, the policy was expanded to provide rental allowances in lieu of quarters to all commissioned officers on the active duty list. The size of the public quarters or the amount of the housing allowance was related to the rank of the officer and length of service. No

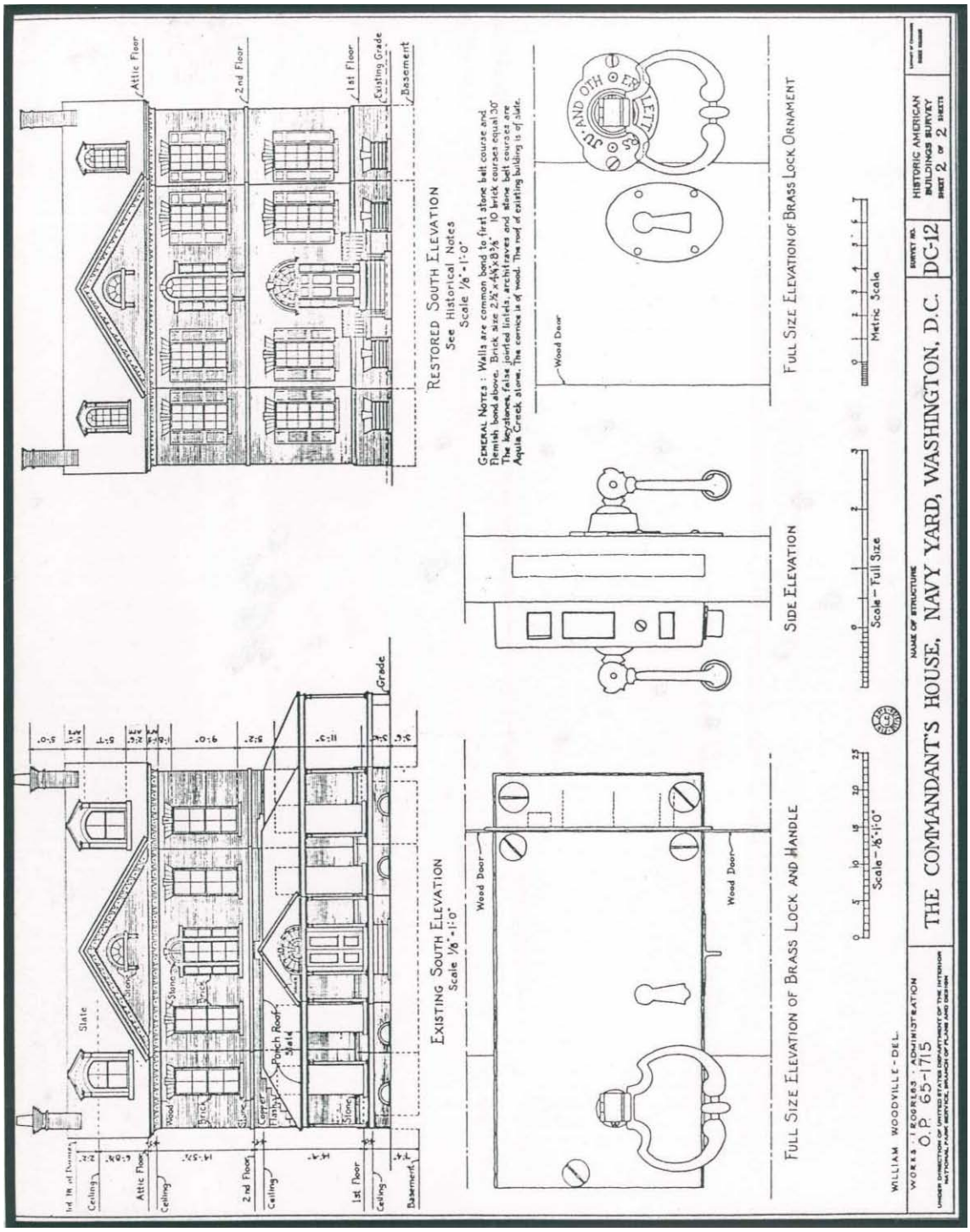


Figure 7. 1804 Commandant's House, Washington Navy Yard, Washington, D.C. (From Prints and Photographs Division, Library of Congress, Historic American Buildings DC-12)

Figure 8. Commandant's House, Marine Corps Barracks, Washington, D.C. (Courtesy of U.S. Marine Corps)

allowances for family housing were provided to enlisted personnel until World War II. Enlisted personnel were accommodated in barracks (Fairbanks and Lovelace 1956:19).

During the early 1900s, both the Navy and the Marine Corps undertook major expansion programs to improve existing facilities and to construct new installations. By 1910, the Navy had 2,645 officers and 46,076 enlisted men (Naval Historical Center ca. 1997). At Navy installations, Classical Revival designs in the Beaux Arts academic tradition dominated this period of construction. Between 1900 and 1910, the Navy selected prominent civilian architects to design new installations. These architects were influenced by the design approach promoted by the Ecole des Beaux Arts as reflected in formal urban plans and classically-inspired architectural designs. Jarvis Hunt designed the Great Lakes Training Station, Illinois, with its Beaux Arts master plan with classically-inspired architecture. Officer housing was located in two distinct areas; a row of eleven residences located behind the administration buildings overlooking Lake Michigan, and three quarters for medical officers are sited next to the hospital (Figure 10). At the U.S. Naval Academy, Maryland, the Navy constructed a new officer education facility designed by noted architect Ernest Flagg, a proponent of Beaux Arts principles. Flagg's officer quarters also displayed classical detailing to complement the overall installation design (Figure 11).

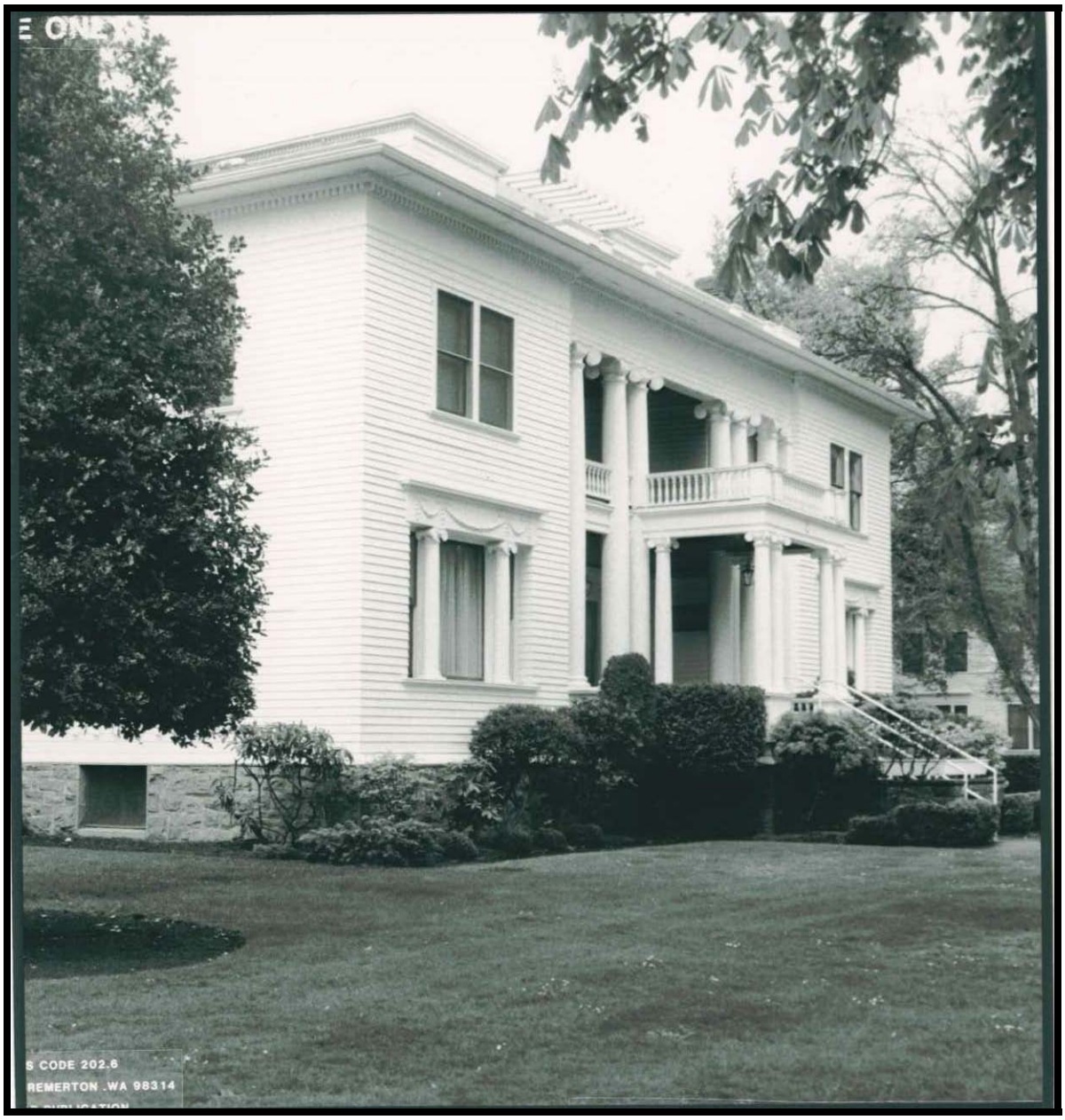


Figure 9. 1896 officers housing, Puget Sound Naval Shipyard, Washington. (Courtesy of U.S. Navy)

The Marine Corps also initiated a major building program to improve and to expand facilities. This building program coincided with the evolution of the Marine Corps into an independent fighting force that operated in foreign expeditions. Between 1903 and 1907, the Marine Corps Barracks in Washington, D.C., received a new barracks and new officer housing, which was designed by the local architectural firm of Hornblower and Marshall. New Marine Corps reservations, including barracks and officer housing, were constructed at the Naval Academy, Maryland; Philadelphia Navy Yard, Pennsylvania; and, Norfolk Navy Yard, Virginia. The housing constructed during this period reflected the influences of classical or Colonial Revival architectural styles.

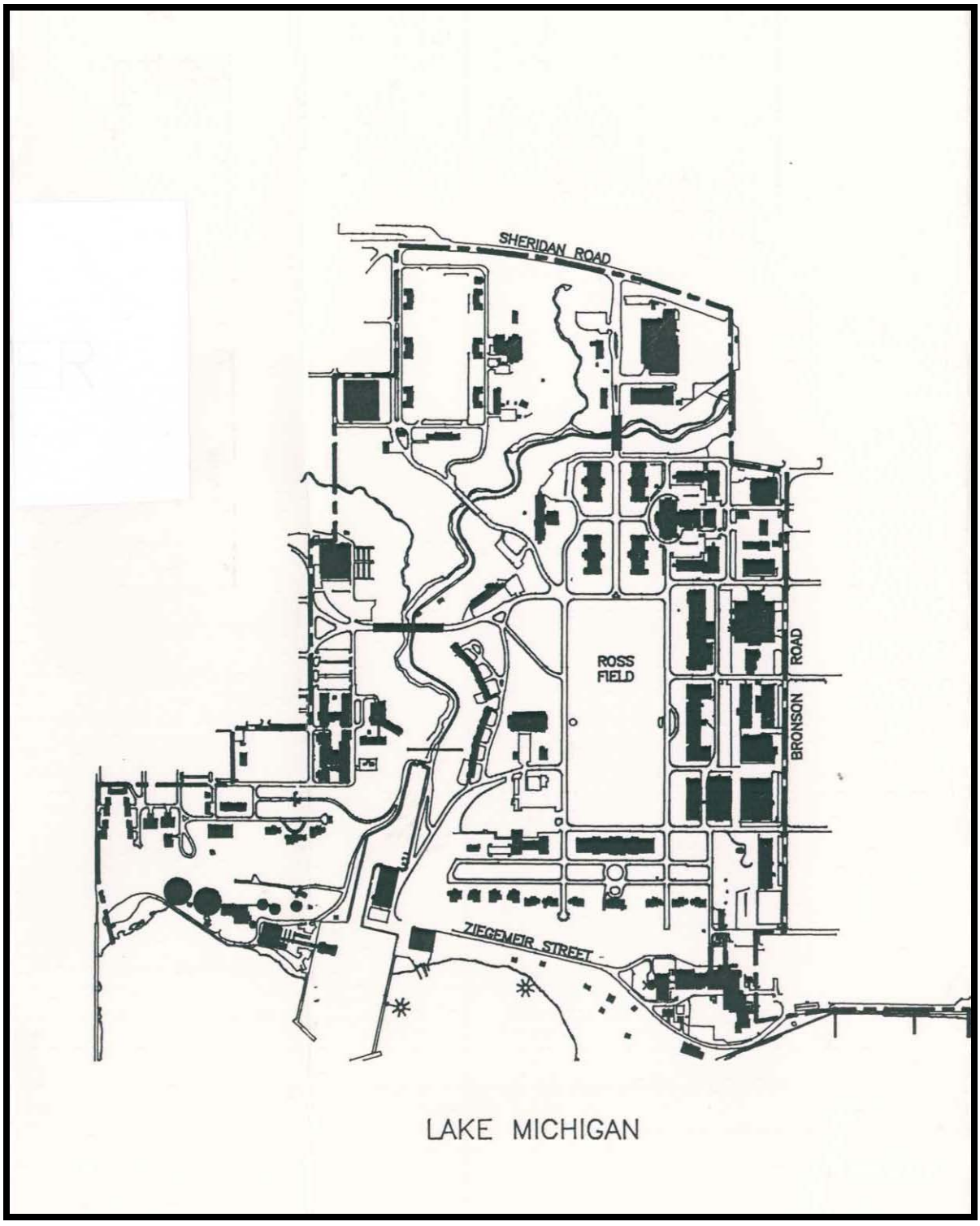


Figure 10. Beaux Arts-inspired plan of Naval Training Center Great Lakes, Illinois. (U.S. Army Corps of Engineers 1995)

Figure 11. 1905 duplex officers housing designed by Ernest Flagg, U.S. Naval Academy, Maryland. (Photo taken by RCG&A)

During World War I, both the Navy and the Marine Corps required additional facilities to train recruits. The Navy also required facilities for building more technically advanced ships, storing ordnance and general supplies, and supporting new shore-based technologies, such as air stations and radio stations. When the United States entered the war in April 1917, the Navy had four training stations with a total capacity to house 6,000 men. In 1918, Navy personnel numbered 31,194 officers and 495,662 enlisted men (Naval Historical Center ca. 1997). By November 1918, the Navy had 40 stations with accommodation for 191,000 men in winter and 204,000 men in summer (Fairbanks and Lovelace 1956:19). The majority of personnel were accommodated first in tent camps, then in wood-frame temporary barracks. The same pattern of providing accommodations occurred at Marine Corps training bases, such as Quantico, Virginia.

After the end of World War I, personnel levels in the Navy and the Marine Corps remained substantially higher than during the nineteenth century. Between 1923 and 1936, Navy personnel ranged between 94,000 and 98,000 officers and enlisted personnel (Naval Historical Center ca. 1997). The Navy owned a large number of installations that supported many technological innovations that were no longer tied to the traditional Navy shipyards. New types of installations required to support Naval operations included training stations, air stations, ordnance and supply stations, Naval stations, and Naval operating bases to support fleet activities. The Marine Corps primarily required expanded training bases. Each new installation required staffing, and the Navy and Marine Corps added more housing to accommodate increasing numbers of shore-based personnel, both at newly established shore facilities and expanding installations. At Navy yards, quarters were assigned, based on availability, to the following personnel: Captain of the Yard, Manager of the Yard, Engineering Officer, Construction Officer, Medical Officer, Supply Officer, Public Works Officer, Aid to Commandant, Inspection Officer, Senior Assistant in the Machinery Division, Senior Assistant in the Hull Division, Senior Assistant to the Captain of the Yard, and Senior Assistant in the Inspection Department. A limited number of houses

were available for civilians employed in the yard on an impermanent basis (Bureau of Yards and Docks 1923:2501-02). At other types of Navy installations, such as hospitals, air stations, and supply depots, public quarters were reserved for senior officers supervising the installation.

During the 1930s, Navy construction programs benefited from additional construction funds available under the National Industrial Recovery Act of 1933 and subsequent work-relief and public-works appropriations acts passed during the mid-1930s during the Great Depression. The National Industrial Recovery Act authorized the expenditure of approximately $30 million for shore construction work (Bureau of Yards and Docks 1937:1). The Navy used the funds to expand and improve existing installations, as well as build new ones. One aspect of this construction program was to continue to expand the amount of available family housing.

The Bureau of Yards and Docks oversaw construction programs for the Navy and Marine Corps during this period. New installations and expansions to existing installations were undertaken according to master plans. Building designs usually adopted elements of the regional architecture of the installation's location. It was the policy of the Bureau of Yards and Docks to design officer quarters to reflect local climate, site, and local style of architecture within cost limitations and using available construction materials. It was recommended that the quarters be sited to take advantage of sunshine in the primary living spaces and cooling breezes in warm weather. Detached houses were preferred, but costs sometimes required the construction of semi-detached, two-family houses, and four- to six-family apartment buildings. The Department of Commerce publication *Recommended Minimum Requirements for Small Dwelling Construction* was referenced for specifications on the thickness of masonry walls, method of framing, and chimney and fireplace construction (Bureau of Yards and Docks 1938:2T-3T).

Examples of these policies were evident throughout the inventory of Navy and Marine Corps on-shore installations. During the 1920s, the Navy and Marine Corps established several installations near San Diego, California. These installations were planned as unified installations with building designs featuring Spanish Colonial Revival architecture (USACE 1995: Vol. 2:373ff) (Figure 12). At Naval Air Station Pensacola, Florida, family officer quarters exhibited Georgian Colonial Revival architectural motifs. The Navy also constructed four-family apartment buildings at Pensacola to house student officers and their families. During the inter-war period, family housing areas on Navy and Marine Corps bases began to resemble civilian suburban neighborhoods with houses sited along curving streets (USACE 1995: vol 2:373ff; vol 1:221).

From 1936 onward, the number of Navy personnel continued to increase in response to world tensions and the beginnings of World War II in Europe. After the bombing of Pearl Harbor on 7 December 1941, the Navy quickly expanded to one million officers and enlisted men. In 1943 and 1944, Navy personnel numbered more than three million. Just prior to the United States' entry into the war, on-shore installations for the Navy and Marine Corps were expanded. New training, supply, ordnance and general storage, and air installations were established to meet the anticipated demands of war. As part of the establishment of new installations and the expansion of existing installations, the Bureau of Yards and Docks continued to build public quarters to house senior officers. Examples of officer houses constructed during this period were wood-frame, two-story buildings generally with wood siding or asbestos shingle siding, designed in response to the availability of construction materials (Figure 13).

Early during World War II, Navy regulations were changed to allow public quarters to be assigned to married enlisted men with dependents. Initially the regulations allowed quarters for married enlisted men of the top three pay grades, then later extended to all enlisted men. Although the regulations were changed, the implementation of the regulation was always limited by the availability of quarters at a particular location (Fairbanks and Lovelace 1956:20-21).

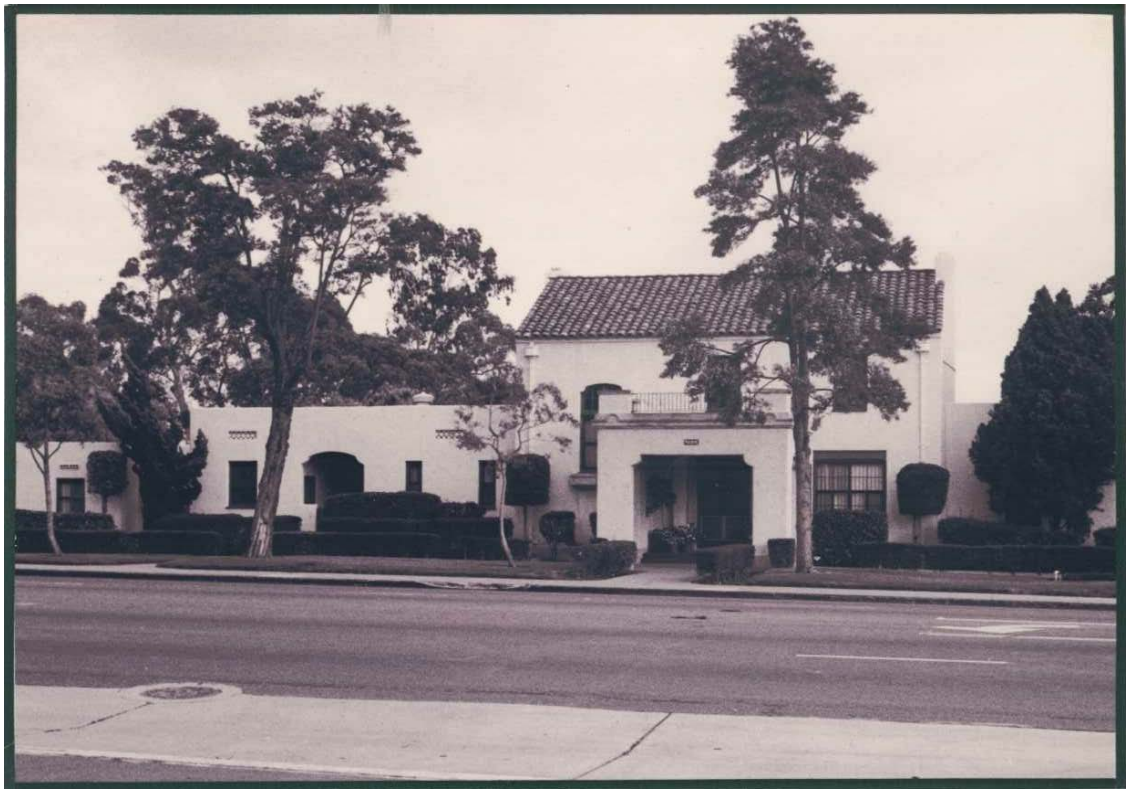


Figure 12. 1922 senior officer housing (Quarters A) at Naval Training Center, San Diego, California. (Photo taken by RCG&A)

Figure 13. 1943 senior officer quarters at NSA Mid-South, Tennessee. (Photo taken by RCG&A)

The critical need for family housing for war workers and military personnel during World War II was met through the development of low-cost family rental housing by Federal agencies and the military (Fairbanks and Lovelace 1956:20-21). The Navy and Marine Corps required this type of housing near shore bases or at the homeports where Navy fleets were assigned. The types of installations that required additional housing units were mine depots, fuel depots, ordnance plants, powder factories, ship yards, training bases, and supply bases. Four programs were undertaken to supply the Navy and Marine Corps with the required numbers of housing units: (1) the Navy low-cost defense housing program, (2) the Navy-National Housing Agency defense housing program, (3) the Navy-Federal Public Housing Authority defense housing program for the West Coast, and (4) the Navy Homoja and emergency housing program for Florida and other localities (Bureau of Yards and Docks 1947:371ff).

The Navy low-cost defense housing program was the first construction program to be implemented through funds directly allocated to the Navy under Public Law 671 passed 28 June 1940. Although the Navy built and leased or rented the housing, title to the housing remained with the U.S. Housing Authority. The Bureau of Yards and Docks was assigned the responsibility to implement this housing construction program, including design, preparing specifications, and contracting. The first project constructed using these funds was for 50 units at Naval Operating Base Norfolk, Virginia. The houses were completed in 48 days. The plan was to construct 18,895 family housing units in 43 locations ranging from Maine to Hawaii and from Alaska to the Panama Canal Zone. The cost of each unit was not to exceed $3,500 per family, including land acquisition, installation of utilities, roads, walks, and other accessories. By the end of 1941, approximately 15,600 of the 18,895 planned family housing units were completed and occupied.

In 1942, all housing construction activities were consolidated under the National Housing Agency, which relieved the Navy's Bureau of Yards and Docks from serving as the principal construction agency for housing. The Navy-National Housing Agency defense housing program added an additional 4,315 family housing units to the Navy's inventory. The total defense family housing units constructed for the Navy in 1941 and 1942 was 24,000. The housing situation of Navy personnel assigned to the West Coast was alleviated by the Navy-Federal Public Housing Authority defense program that constructed 10,000 family housing units in California, Oregon, and Washington beginning in September 1944. Temporary emergency housing in trailers or Quonset huts was provided for transient Navy personnel and their families in between overseas assignments. Emergency housing also was constructed in Florida and other localities with a high concentration of Navy installations (Bureau of Yards and Docks 1947:371ff).

The types of housing constructed under these programs were temporary in nature. Buildings were designed for single family, duplex, and multi-family buildings. Units ranged from emergency trailers to efficiency apartments to three-bedroom units. Some large projects incorporated a community shopping center and schools. Rents were within the housing allowance of uniformed personnel (Fairbanks and Lovelace 1956:21).

In summary, the number of family housing units provided by the Navy and Marine Corps dramatically increased during the first half of the twentieth century. Prior to World War I, the Navy and Marine Corps housing policy extended housing only to senior officers residing at on-shore installations. During the inter-war period, the Navy and the Marine Corps acquired additional on-shore facilities and gradually increased the numbers of officer family housing. At the beginning of World War II, the housing policy was changed to include the provision of family housing to enlisted personnel. The results of the housing construction programs implemented during World War II were the construction of temporary buildings. With peacetime personnel levels in the Navy and Marine

Corps higher than at any time in history, providing adequate family housing became an ever-increasing concern during the postwar period.

3.2.12 Air Force and Navy Housing Appropriations during the Immediate Postwar Period

Military family housing was not constructed during the immediate postwar period as military planners focused on supporting the nation's new foreign policy objectives (Office of the Secretary of Defense 1961:5). The immediate priorities of the armed forces included the reorganization of the military's administrative structure and the creation of an independent Air Force. A large number of temporary World War II buildings survived, and Federal funds were directed toward converting these buildings into family housing. Congress did not appropriate funding for permanent family units for two years after the war (USAEC 2003:3-20). The temporary-building conversion program created 12,800 housing units, but this housing was substandard and deteriorated rapidly due to its original design and materials. The program was suspended in December 1947 (USAEC 2003:3-20).

3.2.13 Public Law 626

While Congress and military leaders quantified the magnitude of the military family housing shortage, Congress passed a law in June 1948 to begin to address the problem. Public Law 626 authorized construction at Air Force and Army installations for fiscal year 1949. The Navy was not included. The law was intended to spur construction of family housing through three significant policy changes (USAEC 2003:3-21; U.S. Public Law 626 1948:380-1).

First, size limits rather than cost limits were imposed on the construction of family housing. Public Law 766, which appropriated funds for construction authorized under Public Law 626, reinstated cost limits but simplified them into three ceilings: $10,000 for commissioned officers, $7,500 for commissioned warrant or warrant officers, and $6,000 for enlisted men (USAEC 2003:3-21). Second, Public Law 626 extended family housing to enlisted men, who previously were ineligible for housing. Third, the law repealed a 1917 spending cap that required the approval of the Secretary of War for construction budgets exceeding $5,000 (USAEC 2003:3-21; U.S. Public Law 626 1948:380-1). Figure 14 provides an example of housing constructed during this period.

Pubic Law 626 imposed limits on building type and space. Authorized family quarters comprised a "multiple type," which was eight families to a unit, or an "apartment type," which was six families to a unit (USAEC 2003:3-21; U.S. Public Law 626 1948:380-1). The following space limits were mandated:

- 1,080 square feet for enlisted men,
- 1,250 square feet for warrant officers, flight officers, and commissioned officers of or below the rank of captain,
- 1,400 square feet for majors and lieutenant colonels,
- 1,670 square feet for colonels, and
- 2,100 square feet for general officers.

3.2.14 Conclusion

The postwar Air Force and Navy faced an unprecedented challenge in providing family housing to both officers and enlisted personnel in the Cold War era. Historically, the military services

Figure 14. Four-family officer housing constructed in 1948, Mountain Home, AFB, Idaho. (Photo taken by RCG&A)

had provided family housing only to officers. This housing was designed according to regional and adopted popular national architectural styles in domestic design. Occasionally, standardized plans were used. This historical precedence of reflecting popular civilian housing trends in military housing provided an approach for the design and construction of family housing during the Cold War era.

3.3 POSTWAR HOUSING TRENDS

3.3.1 Introduction

New trends in civilian housing emerged during the late 1940s, the 1950s, and the 1960s. Military housing reflected these housing trends. Rising marriage rates, changing demographics in the workforce, and increasing family wealth resulted in a postwar housing boom (USAEC 2003:3-22). Innovations in housing construction focused on the expanding market for single-family houses in suburban developments.

3.3.2 The Changing Economy, Demographics, and Employment

A distinctive feature of postwar America was the overall economic prosperity resulting from high wages and high employment. Consumer demand was unleashed after years of economic depression and wartime austerity. The corresponding rise in family income led to a postwar housing boom.

Representing a dramatic increase during the two decades following World War II, the Gross National Product (GNP) rose from $200 billion in 1940 to $300 billion in 1950, to over $500 billion in 1960 (Conte and Karr 2001). Low unemployment during the postwar years contrasted with high unemployment rates during the Depression. Unemployment reached double digits during the Depression and climbed to a peak of 24.9 per cent in 1933 (VanGiezen and Schwenk 2003). In contrast, unemployment fluctuated between three per cent and 4.5 per cent during the 1950s and 1960s; this figure rose above five per cent during recession years 1954, 1958, and 1961 (Schumann 2003). During the 1950s, unemployment dropped to its lowest point of the decade in 1953, when the rate was 2.9 per cent (Rich 2002).

The American economy shifted from reliance on manual labor to office work. By 1953, the number of white-collar employees surpassed the number of blue-collar employees (Manchester 1973:953).

Marriage rates increased and the marriage age dropped. The average marriage age for women during the 1950s decreased from 22 to 20 and into the teens (Manchester 1973:955). Seventy per cent of women, with an average age of twenty, were married by the end of the 1950s (Breines 1992:50). As a result, the country's birthrate rose for the first time since the early nineteenth century (Breines 1992:50). The number of college-educated women having three or more children doubled in twenty years; families with four to six children became the norm (Manchester 1973:956). White women left university at a ratio of two out of three to marry; nearly one-third of married women had their first child by age 20 (Breines 1992:50).

The "doubling-up" of households that occurred during the Depression and World War II declined as more families established independent households. Prior to World War II, many urban families occupied apartments and generally moved to larger apartments as their space needs increased (USAEC 2003:3-23). Twenty per cent of American households reported crowded conditions in 1940 (U.S. Census Bureau 2000a). After World War II, renters graduated to home ownership (Beyer 1965:70). Home ownership increased overall from 43.6 per cent in 1940 to 55 per cent in 1950 (U.S. Census Bureau 2000b). During the 1950s and 1960s, 49.7 per cent of the population under 35 had moved from apartments to owner-occupied houses (Beyer 1965:69, 85).

The demographic shift, begun in the late nineteenth century with the migration from farms to cities and suburbs, continued. In 1900, two-thirds of families lived on farms (Gutheim 1948:8). By the end of World War II, two-thirds of American families lived in cities and suburbs (Gutheim 1948:6). Farm households were much larger than postwar households. Many included a nuclear family and extended families (Gutheim 1948:8). By the end of World War II, more families lived in the suburbs, and the husband traveled to work in an office or a factory (Gutheim 1948:8). The husband frequently was the family's sole breadwinner (Gutheim 1948:8). The postwar family was smaller than its predecessor, averaging fewer than five people and consisting of a mother, father, and children (Gutheim 1948:8).

These changes in the economy and society led to a postwar housing boom. This national demand for housing helped contribute to the growth of suburbanization (USAEC 2003:3-23).

3.3.2.1 Disposable Income, Consumership, and Leisure

Disposable income increased with rising income levels. The development of new consumer products marketed through aggressive advertising influenced the rising middle class to dramatically

increase spending and to decrease saving. Improved working conditions, employment benefits, highway systems, and automobile ownership fostered economic confidence.

The median family income rose dramatically, from $3,083 in the late 1940s to $5,657 in the late 1950s (Manchester 1973:947). A factor in increased family incomes was the contribution made by women. Two incomes allowed middle-class American families to acquire such big-ticket items as houses and cars, items previously considered luxury goods. Women's contributions enabled the family to purchase "a second car, a house in the suburbs, a college education for the children" (USAEC 2003:3-24).

In contrast to the thrift of the Depression, more of consumers' incomes were spent, rather than saved. Consumer debt grew 55 per cent between 1952 and 1956. Installment credit for automobiles increased 100 per cent (Manchester 1973:947).

One commentator described this rise in spending as "consumership," a phenomena where Americans were encouraged to acquire the "good life" (Manchester 1973:949). Among the products introduced to consumers were central vacuum systems, vinyl flooring, push-button phones, FM stereo sets, washer-dryers, and electric blankets. Consumers quickly assimilated these items into their lives (USAEC 2003:3-24, 3-25). Television advertising influenced consumership. By the early 1960s, Americans owned 56.4 million television sets, providing manufacturers an effective way to market products and create demand. In 1957, approximately 75 million Americans watched an average 19 hours of television per week (USAEC 2003:3-24, 3-25).

Economic prosperity and low unemployment created more leisure time. The work week in 1950 was 15 hours shorter than in 1900. Many workers also received paid vacation time and paid holidays. Previously reliant on mass transportation system schedules, workers now drove personal automobiles on new highway networks reducing commuting time between home and job (USAEC 2003:3-25). Consumers used this increased leisure time for family and home-based activities such as sports and bridge parties, and for passive recreation, such as going to the movies and watching television (USAEC 2003:3-25).

3.3.3 Historical Overview of Suburban Development

Suburbs have existed as a community type in the United States since the nineteenth century. While post-World War II suburban housing developments traced their roots to the nineteenth century prototype, these developments also reflected the postwar emphasis on the nuclear family, automobile, and new construction materials and methods (USAEC 2003:3-26). .

3.3.3.1 Nineteenth-Century Suburban Development

The first phase of suburban development in the United States is associated with railroad suburbs, which were built between 1840 and 1890. The term "railroad suburb" referred to a residential development outside the city, but accessible by railroad lines. At first, railroad suburbs were separate settlements from cities, and provided the affluent with an escape from the city. But by the end of the nineteenth century, these outlying developments represented a middle-class ideal. The large suburban houses with lawns in semi-rural settings represented success, security, and moral stability. Nineteenth-century social reformers hailed them as symbols of domesticity (USAEC 2003:3-26).

3.3.3.2 Twentieth-Century Suburban Development

During the twentieth century, two urban planning movements influential in the United States incorporated many qualities of the earlier suburbs. These movements promoted ideal developments: the Garden City Movement of the early 1900s and the neighborhood unit of the interwar period. The Garden City movement incorporated open space, greenery, and the interaction with nature in new towns with limited population and size. Developments featured irregularly shaped super blocks; circulation systems that directed traffic to major streets; buildings designed to complement nature; variety in design; courts; and walkways to separate pedestrian and vehicular traffic. The Garden City idea was promoted by English social reformer Ebenezer Howard and advanced in 1902 and 1905, when Barry Parker and Howard Unwin applied its principles in their new towns of Letchworth and Hamstead Gardens, England. Several towns in the United States were developed using Garden City principles, including Homestead, Pennsylvania and Forest Hills Gardens, New York (USAEC 2003:3-26, 3-27).

The neighborhood unit evolved to accommodate the automobile. The plan for Radburn, New Jersey, developed by Henry Wright and Clarence Stein in 1928, applied the neighborhood unit concept. Only a portion of the plan was developed, but set a precedent for suburban development into the postwar period. Radburn illustrated several new planning approaches: neighborhood streets were varied in size to accommodate local traffic and prohibit through traffic; the project housed approximately 5,000 residents, the population level necessary to support an elementary school; 10 per cent of the project was devoted to green space; schools were located at the center of the neighborhood; and shopping areas were located at the periphery (USAEC 2003:3-27).

3.3.3.3 Post-World War II Suburban Development

Suburbanization during the post-World War II period was distinguished by its scale, uniform design, and construction technologies. Several factors contributed to the dominance of suburban development during this period. The United States experienced a baby boom as war veterans returned to their families or married and started new families. These new families exacerbated an existing civilian sector housing shortage. Public policies discouraged housing development in urban areas, while government incentives and increased consumer spending power encouraged single-family house construction in suburban developments. Construction methods and new materials developed during the World War II mobilization now were applied to private-sector housing. Assembly-line methods of construction and cheaper materials enabled mass housing construction. The automobile enabled workers to live farther away from employment (USAEC 2003:3-26).

One distinguishing feature of post-World War II suburban development was its focus on children. The suburbs were seen as places where families could take advantage of new schools and other amenities in an environment that was safer, quieter, and less congested than the city. These features complemented society's increasing focus on home, family, and children. An urban planner described the suburbs as "generally home-centered, with the primary emphasis on child-rearing, and with the public school the chief link between home and community…" Family life was organized around children's dance, music, and sports lessons, play groups, parties, and Cub Scout and Girl Scout meetings (USAEC 2003:3-27).

3.3.4 Housing Trends

The housing industry was transformed during the postwar period in response to pent-up consumer demand for housing; new methods of home financing; Federal tax incentives that provided income tax deductions for mortgage interest and discouraged ownership of vacant land; new construction technologies; and road construction that facilitated travel (USAEC 2003:3-27, 3-28). Construction of single-family houses took precedence over multi-family apartment buildings. New design techniques and construction materials emerged. House designs abandoned traditional styles, such as Colonial Revival, and shifted toward the modern, one-level or split-level horizontally oriented ranch style. Brick was replaced by new materials such as asbestos and aluminum (USAEC 2003:3-28).

3.3.4.1 General Housing Trends

Trends in housing reflected postwar prosperity. The housing market served consumers who wanted single-family detached houses, more space, access to highways, and access to public utilities, such as plumbing, gas, electricity, and phone service. The prevalence of the single-family detached house continued to grow, while the proportion of attached dwellings and apartments declined. In 1890, the largest proportion of non-farming families, 44.3 per cent, lived in apartments. The second-highest number, 41.9 per cent, lived in single-family houses, and 13.8 per cent lived in rowhouses or semi-attached houses (USAEC 2003:3-30). In the 1940 census, 56.6 per cent of dwelling units were tenant-occupied, compared with 43.3 per cent owner-occupied, reflecting the continuing prevalence of apartments and other rental housing (Inter-University Consortium for Political and Social Research 2002). After 1950, the number of homeowners surpassed renters (Utah Governor's Office of Planning and Budget 2003:2). The proportion of detached houses increased slightly, from 63.6 per cent in 1940 to 68.8 per cent in 1960. The number of attached units (rowhouses and side-by-side houses) and buildings with two or more units remained steady or declined (U.S. Census Bureau 2000c).

Statistics on crowding levels in housing document the move to single-family detached houses and a reduction in the number of occupants per dwelling. These statistics indicate that dwellings increasingly were occupied by members of one nuclear family. Of the 1940 census respondents who reported per-person room occupancy levels, 20.2 per cent reported crowded conditions where one or more people occupied a room; nine per cent reported severely crowded conditions with more than 1.5 people per room. Crowding declined in 1950, when 15.7 per cent of those surveyed reported crowded conditions and 6.2 per cent reported severely overcrowded conditions. In 1960, 11.5 per cent of respondents were crowded, and 3.6 per cent were severely crowded (U.S. Census Bureau 2000a).

Housing during the postwar period increasingly incorporated public utilities that improved sanitary conditions and provided convenience for homeowners. In 1940, 45.3 per cent of homes lacked complete plumbing facilities, which were defined as hot and cold piped water, a bathtub or shower, and a flush toilet. States in which nearly or more than 50 per cent of dwellings lacked plumbing were concentrated in the West and South; states in which fewer than 25 per cent of residents lacked complete plumbing were concentrated in the Northeast. The national rate declined in 1950, when 35.5 per cent of Americans lacked complete plumbing, and fell more drastically in 1960, when only 16.8 per cent of Americans lacked complete plumbing. Units specifically lacking a flush toilet totaled 35.3 per cent in 1940, and dropped to 24.5 per cent in 1950 and to 10.3 per cent in 1960 (U.S. Census Bureau 2000d, 2000e).

Statistics on house heating fuel indicate that postwar homeowners increasingly relied on gas and fuel oil, and decreased dependence on less-convenient coal and wood. The number of homes

using utility gas increased from 11.3 per cent in 1940 to 26.6 per cent in 1950 to 43.1 per cent in 1960. Ten per cent of respondents used fuel oil in 1940, compared with 22.6 per cent in 1950 and 32.4 per cent in 1960. Electricity and bottled gas were negligible heat sources in 1940 and 1950, but in 1960 increased to 1.8 per cent and 5.1 per cent, respectively. Coal was the dominant house-heating source in 1940, with 54.7 per cent of homeowners using it, but its use declined to 12.2 per cent in 1960. Wood use declined from 22.8 per cent of homeowners in 1940 to 4.2 per cent in 1960 (U.S. Census Bureau 2000f).

Telephones were incorporated into a majority of American households by 1960, the first year for which statistics are available. In that year, only 78.5 per cent of dwellings included a phone. States with lowest per centages of households phones were concentrated in the West and South; in the state of Mississippi, where more than half of the households, 54.7 per cent, did not have phones. The highest concentration of residents with phones was in the Northeast; Connecticut claimed the highest rate of home phones in the country, at 91.4 per cent (U.S. Census Bureau 2000g).

3.3.4.2 Increasing House Size

The housing shortage after World War II created an estimated need for 20 million houses over the next twenty years (Gutheim 1948:42). During the immediate postwar period, housing advocates called for the construction of larger houses than were being offered in the private housing market (Gutheim 1948:43). The author of a study conducted in 1948 noted that postwar houses were constructed according to minimum standards for space and "seldom have provided enough room for a normal family of five people" (Gutheim 1948:41). The children's rooms were particularly small and did not provide sufficient space for a bed and storage. A lack of space for a desk necessitated the use of other areas of the house for studying (Gutheim 1948:42).

Advocates for better house design also called for larger kitchens. The postwar kitchen was a multi-use area accommodating child care, sewing, and laundry in addition to food storage, preparation, and dining (Gutheim 1948:22, 44). Children needed space for toys and storage. Advocates promoted including toy storage space in each room of the house (Gutheim 1948:27). Additional privacy, recreation space, and storage were identified as necessities for teenagers (Gutheim 1948:32). Many of houses constructed during the period lacked basements and attics, compounding storage problems in an era known for consumerism. Storage of household equipment used periodically posed further challenges (Gutheim 1948:44). Designs with additional storage in the family areas, kitchen, and bedrooms were endorsed (Gutheim 1948:48).

Separate parlors, butler's pantries, and "other specialized rooms" were eliminated in the postwar house (Gutheim 1948:44). Open floor plans with single consolidated living spaces were advanced. Bedrooms generally were small. Critics contended that parents' bedroom should be larger than the other bedrooms in the house, with additional privacy (Gutheim 1948:48).

3.3.4.3 Cost of Housing

Higher incomes enabled an increased number of workers to become homeowners during the postwar period. Depression-era and postwar legislation reduced barriers to home ownership and provided access for low- and middle-income workers who previously did not possess the resources to enter the housing market (USAEC 2003:3-31).

Housing prices rose to capture buyers' increased spending power. The unadjusted national median house value totaled $2,938 in 1940, and rose to $7,354 in 1950 (U.S. Census Bureau 2004). Between 1946 and 1949, a majority of houses, 64 per cent, cost less than $10,000; 29 per cent cost between $10,000 and $19,999 ("The House Market" 1950:120). A 1950 article in *Architectural Forum* magazine speculated that the housing industry's "prime customer" of the decade would be able to spend even more on housing. This "prime customer" was a 35-year-old married man with at least one child, and earned between $4,000 and $10,000 a year. The "prime customer" could afford a house valued at between $10,000 and $25,000 ("The House Market" 1950:120).

However, this prime customer represented only 37 per cent of urban families ("The House Market: 1950:120). As late as 1956, more than half of houses constructed were designed to sell for less than $15,000 (USAEC 2003:3-31). The FHA's and the Veterans Administration's 1956 ranges for moderate-priced homes were approximately $9,600 to $14,000 (Housing and Home Financing Agency [HHFA] March 1956:2-3). In 1960, the U.S. Census identified the national unadjusted median house value as $11,900, but that figure rose dramatically a short time later. According to the HHFA, the median price for homes sold between April and June 1962 was $17,400. In June, 35 per cent of unsold completed homes and 40 per cent of homes under construction were listed at $20,000 or more (HHFA September 1962:2).

3.3.5 The Construction Industry in the 1950s

The postwar housing boom is reflected in statistics on housing starts. From 114,000 in 1944, housing starts rose more than tenfold by 1950, to 1.7 million (Ohio Historical Society 2000). Between 1940 and 1960, the number of total housing units in the United States grew by 56 per cent, from 37.4 million to 58.3 million (U.S. Census Bureau 1990:2). Construction was concentrated in the suburbs. In 1946, suburban construction represented 62 per cent of nationwide construction (Ohio Historical Society 2000). Limited statistical data are available on the construction industry before the Census of Construction Industries was begun in 1967. The HHFA tracked changes in general construction costs and production of building materials. The production of traditional building materials and components, such as hardwood floors, wood doors and windows, and brick fluctuated as builders reduced their use of these materials. Instead, builders experimented with new technologies and cheaper new materials. The HHFA stopped reporting these trends during the early 1960s (USAEC 2003:3-32).

3.3.6 Advances in the Construction Industry

3.3.6.1 Construction Techniques and Standardization

During the early 1950s, contractors and some architects were reluctant to adopt the principle of modular measure. In response, the Producers' Council undertook a promotional initiative and spent $100,000 over the next ten years to encourage its acceptance (Lane 1952:125). The brick industry and metal and wood window manufacturers standardized their product dimensions (Lane 1952:125). The Producers' Council endorsed modular measure for its economy of time and materials. The council asserted that cost of materials would decrease under full adoption of the system due to lower waste, and labor costs required for cutting and fitting materials also would decline (Lane 1952:125).

3.3.6.2 New Materials

In 1960, the HHFA made several observations about new construction materials and housing construction. These observations related to declining use of high-maintenance and expensive materials. The agency noted that lath and plaster were no longer standard interior finishes due to labor costs. Drywall typically was used in mass-produced homes priced for the middle-income market, while plaster finishes were restricted to more expensive homes. Several building elements traditionally constructed on site and in wood were being replaced by less expensive, standardized components. Wood sash was replaced by metal and aluminum window frames. Wood floors were replaced by a variety of composition materials, including asphalt, vinyl, cork, and rubber tile. The number of new dwellings sheathed entirely in wood decreased to one-fourth of all dwelling units. One-third of wood-frame houses were faced in brick or in a combination of brick and wood, or in aluminum siding. Wood shingles declined in use, and were replaced by asphalt shingles (USAEC 2003:3-33).

3.3.6.3 The Rising Dominance of the Merchant Builder

Merchant builders, who specialized in large, rapidly constructed, standardized development projects, dominated residential construction during the post-World War II period. Previously, the majority of houses were constructed by custom builders, who were retained by owners to erect site-specific dwellings. The custom builders frequently were responsible for full construction services, including plans and specifications, cost estimates, and construction work (USAEC 2003:3-33). Approximately half the houses constructed during the 1930s were built by custom builders ("The Builder's House 1949" 1949:81).

Prior to the late 1930s, merchant builders produced "little more than over-styled boxes" that were not noted for their family-friendly design or innovative use of modern building materials ("The Builder's House 1949: 1949:81). The merchant builder rose to prominence in the construction industry during the national mobilization associated with World War II. The construction techniques refined by merchant builders were suited ideally to the large-scale housing developments required for defense workers. The shift in residential construction was supported by government policies. In 1940, the FHA introduced Title VI mortgage insurance, which enabled loans for 90 per cent of project construction costs. Housing demand in the postwar years made large-scale housing projects more attractive to merchant builders. By 1949, the merchant builders were responsible for approximately 80 per cent of the nation's annual residential construction ("The Builder's House 1949" 1949:81).

Standardization in design and in building components made possible rapid construction of large-scale housing developments. Assembly-line construction techniques, mechanization, and standardized materials maximized efficiency. Construction crews were specialized by task, and work followed an assembly line sequence of grading, foundation work, structural framing, exterior finish, and interior finish (USAEC 2003:3-33). Merchant builders adapted to the postwar market and promoted development plans and house designs catering to middle-class families. Merchant builders retained architects, incorporated landscaping, and provided access to community facilities such as shopping centers, schools, and churches, to distinguish their products ("The Builder's House 1949" 1949:81).

Merchant builders often were responsible for all aspects of neighborhood development, including land acquisition, subdivision, road construction, utility installation, housing construction, advertising and sales. The system offered convenience to the consumer and the appeal of safe

neighborhoods of like-minded families. The merchant builder realized profits through economies in construction and volume sales (USAEC 2003:3-33, 3-34).

3.3.7 Levittown

The dramatic change in residential construction and the rise of the merchant builder are illustrated by the success of Abraham Levitt and his sons William and Alfred, who were responsible for the construction of 17,400 houses on Long Island, New York. Built between 1947 and 1950, Levittown was the first and archetypal postwar development of detached single-family houses, which were impressive in their numbers and uniformity. The houses originally were marketed to World War II veterans and their families seeking to escape crowded New York City neighborhoods. Applying the financial incentives offered in the GI Bill with FHA-guaranteed loans, veterans paid $7,900 to $9,500 for a 750- to 800-square-foot house in Levittown. The Levitts executed the massive housing project emphasizing, efficiency, economy, and standardization. For example, architectural designs were uniform and building materials were standardized. Construction workers used power hand tools, such as saws and nailers. Freight cars transported raw lumber into a cutting yard where standardized building elements were fabricated. The Levitts used these techniques in two subsequent developments in New Jersey and Pennsylvania (USAEC 2003:3-34).

3.3.7.1 Site Planning

The Levitts selectively applied urban planning principles in practice during the 1950s that distinguished their developments as suburbs distinct from cities. Houses were sited on individual lots, which fronted 66-foot-wide curvilinear streets. Major traffic was directed to the periphery of the community, and paved sidewalks provided for pedestrian access. Trees, landscaping, and front and rear yard setbacks created "a more park-like appearance." Open space and swimming pools provided recreation (USAEC 2003:3-35).

3.3.7.2 House Design

Levittown houses featured floor plans that were more open than those found in traditional pre-World War II housing. The models initially offered were one-story, 800 square-foot "Cape Cod" designs, with unfinished attics. The exterior design was symmetrical with a center door flanked by shuttered windows. Houses were distinguished from one another by paint color. The floor plan comprised a living room, kitchen, two bedrooms and one bathroom, with minimal divisions between primary living spaces. Some models included combined living and dining areas that flowed into the kitchens. The kitchens were modern and appointed with an electric range, a refrigerator, steel kitchen cabinets, a washing machine, and a water heater. Later models included built-in television sets. By 1949, a 900-square-foot asymmetrical ranch house plan was introduced that reversed the locations of the kitchen and living room. In this plan the front entry opened into a hallway adjoining the kitchen. The living room was located at the rear of the house, and its large windows overlooked the rear terrace (USAEC 2003:3-35; "The Builder's House 1949" 1949:84-93).

3.3.8 House Types

3.3.8.1 Single-Family Houses

The single-family dwelling was the most common house type constructed during the postwar period. New features and designs were introduced. The ubiquitous style was a one-story building with a low roof and minimal ornamentation that extrapolated motifs from historical architectural styles. Inside, postwar single-family houses featured an open floor plan with minimal separations between common rooms. An open kitchen served as the control center of the house. Hallways divided the public and private space. Bedrooms contained closets. Garages or carports were included to accommodate automobiles, and storage spaces were essential since most houses lacked attics and basements. The house was integrated into the exterior environment through large windows that provided views of rear yards and created a feeling of spaciousness (USAEC 2003:3-35).

House plan books increased the popularity of architect-designed houses and provided a variety of price ranges and styles. Home buyers could review the books and purchase blueprints and specifications for specific models, or obtain design ideas. Home Planners, Inc., a Detroit, Michigan company, claimed in a 1954 edition that 1.5 million copies of their plan books and 250,000 sets of blueprints were sold over the previous eight years (USAEC 2003:3-36; Talcott 1954). Although two-story homes were featured in the Home Planner, Inc. compendium, plans for ranch and split-level houses were most numerous. Ranch designs were simple rectangular boxes, rambling ranches featured projecting wings, and split-level houses comprised a one-story wing intersecting a two-story wing at mid-level. The 1954 edition of a design book published by Home Planners, Inc. featured three price ranges: economy-budget homes or one-story homes smaller than 1,000 square feet; economy-deluxe homes or one-story homes between 1,000 and 1,300 square feet; and custom-deluxe homes or one-story homes larger than 1,300 square feet (USAEC 2003:3-36; Pollman 1954).

3.3.8.2 Multi-Family Dwellings

3.3.8.2.1 Townhouse/Rowhouses

The townhouse and rowhouse, built in the United States from the eighteenth century onward, traditionally are urban house forms built to house all economic classes. Each residence was single-family, with its own front door adjoining the street with access from the public sidewalk; the residences shared a common wall. Before the twentieth century, the house type often was built on narrow lots generally platted along gridded streets. Any green space allocated to the dwelling was located at the rear of the buildings. During the twentieth century, rowhouse design evolved to accommodate suburban sites at the edges of cities. Buildings featured rowhouses in groups of four or eight; the design frequently was united through repeating or alternating architectural ornamentation. In contrast to earlier designs, these rowhouses often were set back from the street and included both front and rear yards. During the 1950s, townhouses often included amenities and features similar to those found in suburban single-family houses, including a full bathroom and a half bath, picture windows, linoleum, basements, and kitchen appliances (USAEC 2003:3-37).

3.3.8.2.2 Multi-Unit Dwellings

Multi-unit dwellings generally are buildings with common entrances that house two or more residential units. This class of building includes high-rise and mid-rise apartment buildings as well as lower-scale garden apartments. High-rise apartments were made possible by the invention of the

elevator and advances in building service technology including HVAC and plumbing. Mid-rise apartment buildings generally did not include elevators, and their height was restricted to reasonable access by stairways. Both apartment building types typically were urban forms (USAEC 2003:3-37).

Low-scale, multi-unit buildings were built in new towns or suburbs, and known as garden apartments. The form was introduced between World War I and World War II, and was particularly popular in housing for defense workers during the World War II mobilization. Vanport City, Oregon, was built early in the war to house 40,000 industrial workers. The basic two-story building housed 14 families. Each apartment featured a living room, a kitchen, a toilet, and a bedroom, and extended from the front to the back of the building. Each first-floor apartment had its own entrance; second-floor apartments shared an entry staircase. Separate service buildings housed heating plants, hot water tanks, bathtubs, and laundry rooms (USAEC 2003:3-37; "Vanport City" 1943:53-57).

Vanport City was minimally landscaped, owing to its utilitarian architectural program designed to address a short-term need. The complex was slated for demolition after the war. Formal landscape designs typically were developed for garden apartment complexes. Circulation, formal plantings, and open space typically were included in other developments with garden apartments. Fairlington, built in northern Virginia in 1943 to house 10,000 Pentagon workers, featured U-shaped courts that created building setbacks and green space (Karaim 2000:26). Carteret Village, built in the suburb of Orange, New Jersey, during the early 1940s, featured apartments housed in six, two-story buildings. Four irregularly shaped buildings formed a square frame that surrounded two central U-shaped buildings. Each building was landscaped with lawn and trees. Site design and irregular massing of the component buildings fostered integration with the environment and prevented an institutional appearance (Architectural Record 1944:86-7). Garden apartments constructed during the postwar period were surrounded by open space reflecting the popular rejection of crowded urban housing conditions, national trends in single-family housing, emphasis on outdoor living spaces and interaction with nature. One developer recommended the buildings should occupy no more than 15 per cent of the site (Ring 1948:3).

3.3.9 1956 Women's Congress on Housing

In 1956, the HHFA invited 103 homemakers from around the country to share their ideas for the best designs for the single-family house. The meeting was convened as the Women's Congress on Housing; additional views were obtained through more than 4,000 letters (Heath 1956:1). The group discussed trends that affected home design and provided ideas for interior features and exterior appearances.

One significant change noted in domestic life during the postwar period was its informality. Several reasons were cited. The increased popularity of television translated to greater time at home spent in relaxed, passive recreation. Higher incomes increased consumerism and the number of possessions. High employment made it difficult to find domestic help to maintain order (Heath 1956:1-2). Participants wanted houses designed to accommodate changes in living patterns, regional topography and climate, individual expression, and the personal needs of each occupant (Heath 1956:2-3). Overall, the women wanted a minimum of three bedrooms with closets, a den, one and a half baths, a two-car garage with storage, a basement, and an attic (Heath 1956:6-7).

Participants preferred interior designs that provided maximum convenience for the family and for cleaning. Segregation of space was desirable. Plans with quiet areas, such as bedrooms and dens, clustered together and separated by hallways from the active areas of the house were promoted. The women also discussed the desirability of a new spatial division, a family room, which could be

attached to the kitchen and which provided a place for family togetherness. Meals could be served in the family room and children could work or play within range of their mother (Heath 1956:4). The addition of a family room for daily life made possible a more formal living room, comparable to the historic parlor. The living room became a quiet room used for entertaining guests (Heath 1956:5).

Further recommendations included the addition of a "decontamination area" and bathroom near the kitchen and a front foyer to enable removal of boots and coats before entering the house. Both requests were seen as making cleaning easier, as were interior hallways to reduce foot traffic between rooms. A formal dining room was desirable and seen as necessary for teaching children table manners in a formal setting (Heath 1056:5-6).

The congress preferred exterior designs that complimented the informality and simplicity of the interior. Exterior designs were preferred that did not reflect a particular architectural style, except in general terms. Pitched roofs with overhanging eaves and harmony in the exterior elements were cited (Heath 1956:8).

3.3.10 Road Design during the Postwar Period

The automobile made possible the development of suburbs, but architects, planners, and builders strove to control their impact on suburban communities. They recognized the potential for unrestricted traffic in residential neighborhoods to result in accidents, property damage, injury and death. Planners of suburbs employed a variety of design techniques to control the dangerous traffic. Curvilinear streets and cul-de-sacs were intended to curtail high-speed traffic. Off-street parking was encouraged by large lots that accommodated carports or attached garages. Planners advocated irregular plans that incorporated green space and recreational areas, and developers attempted to retain existing trees and topography to integrate natural landscapes in street plans. Subdivision design standards for the FHA incorporated these planning principles; Air Force and Navy design instructions referenced the FHA design standards. These standards encouraged cul-de-sacs, three-way intersections, and curvilinear streets (USAEC 2003:3-39).

3.3.11 Conclusion

Higher wages and pent-up consumer demand fueled a housing boom during the postwar period. Housing trends in the civilian market focused on meeting the housing need quickly through standardization of materials and construction methods. Merchant builders employed standardized materials, assembly-line construction techniques, and uniform house design to construct large-scale residential developments. The construction industry met consumers' demand for single-family dwellings with modern amenities. These developments were located outside urban areas in suburban settings that incorporated nature and restricted congestion. These trends were evident in military family housing constructed during the period.

3.4 GOVERNMENT HOUSING POLICIES

3.4.1 Introduction

The policies of several Federal government agencies influenced the development of private-sector civilian housing, public housing, and military family housing during the postwar period. Government policies directly and indirectly encouraged homeownership, and favored single-family

houses in suburbs. Foreclosures and bankruptcies during the Depression highlighted the need for increased Federal involvement in financing home ownership and protecting homeowners during economic upheaval. Federal programs, such as guaranteed FHA and VA loans and the development of a comprehensive national highway construction program, encouraged suburban homeownership. This increased government involvement established the precedent for Congressional support of both limited appropriations for military family housing and of the private-sector Wherry and Capehart programs.

3.4.2 Overview of Federal Housing Policy

3.4.2.1 Federal Housing Policy

The Federal government involvement in the U.S. housing sector dates from World War I, and has focused primarily on financing. Historically, Congress left the challenges of alleviating housing shortages and providing adequate housing for low- and middle-income citizens to the private sector, local governments, and charitable organizations. The private sector and elected officials approached government intervention in the housing market with caution, fearing conflicts with private enterprise. The effect of the economic Depression upon large segments of the population prompted the Federal government to create comprehensive housing policies (USAEC 2003:3-42).

As the Federal government formulated its housing policy, debate arose concerning the level of quality appropriate for government-owned housing. The dominant opinion held that such housing should provide the lowest acceptable quality of shelter. This opinion later influenced provisions of the Wherry and Capehart acts extending Federal mortgage insurance for the construction of military family housing. The percentage of the Federal housing budget devoted to low-cost housing historically has been modest. Critics contend that the Federal government historically has not been interested in solving the problem of inadequate housing, particularly for low-income citizens. The low funding levels for the military construction of family housing during the 1950s and 1960s tend to support this contention. Low Congressional appropriations for military family housing, including those for the Air Force and the Navy, prevented the service branches from addressing the housing shortage through traditional military construction procedures and eliminating the military housing shortage (USAEC 2003:3-43).

3.4.2.2 Federal Housing Policy during World War I

The mass mobilization of defense workers for World War I prompted the first comprehensive Federal program for private housing. The surging population around production centers created a housing shortage, which was particularly acute for workers with modest incomes. Congress established the U.S. Shipping Board Emergency Fleet Corporation (EFC) and the U.S. Housing Corporation (USHC) in 1918. The two organizations used different approaches in addressing this housing shortage. The EFC took an indirect approach through which funds were loaned to limited-dividend realty companies for housing for shipyard employees. Under the EFC's supervision, 28 privately owned projects in 23 cities were built, creating 8,000 houses and 800 apartment units. The USHC adopted a direct approach. The agency built and managed housing for workers at arsenals and Navy yards, including 6,000 houses and 7,000 apartments in 16 states and the District of Columbia (Lusignan et al. 2001:10-11).

After the war, Congress dismantled both agencies and sold USHC housing and any EFC housing acquired through mortgage defaults. The Federal government returned to its prewar policy,

which relied upon the private sector and charitable organizations. Members of Congress remained uneasy with long-term involvement in the housing market. However, the programs established during the war set a precedent for two forms of government involvement in housing: Federal loans and direct construction. These precedents helped shape Federal housing policy during the 1930s (Lusignan et al. 2001:12).

3.4.2.3 Impact of the Great Depression on the Housing Industry

The 1929 stock market crash affected all aspects of the private housing market and the construction industry. By 1933, housing construction had dropped to 93,000 units per year, down 90 per cent from a record high of 176,700 in 1925. Of the 14 million Americans who were unemployed, one-third had worked in the building trades (Lusignan et al. 2001:26). Nationally, only 150,000 workers were employed on construction sites (USAEC 2003:3-44).

The effect of the Depression on homeowners with mortgages was dramatic. The highest mortgage foreclosure rates in U.S. history occurred during the Depression. In 1933 alone, mortgage foreclosures displaced 273,000 Americans, at a rate of 1,000 per day. Half of all mortgages were in default. The drastic scale of mortgage defaults indicated problems with the then-current home financing system. Home ownership was a luxury, mortgage terms were stringent, and borrowers were subject to downturns in the economy. House purchases commonly occurred through full payment, or through short-term mortgages that required a 30 per cent down payment. Mortgage payments typically were spread over one to three years. A common payment structure was balloon financing, under which small payments were made for the majority of the mortgage and a large payment was made at the end of the mortgage. The loan holder could refinance the loan when the mortgage expired, subject to current market conditions and terms. This system functioned well when economic conditions were favorable, but during economic downturns such as the Depression, mortgage holders often lost their equity and their houses through default and foreclosure (USAEC 2003:3-44).

3.4.2.4 Early Federal Efforts to Assist the Housing Industry

During the early years of the Depression, the Federal government attempted to alleviate its effects by targeting home defaults and foreclosures. In 1931, President Hoover convened the White House Conference on Home Building and Home Ownership to find ways to promote and encourage middle-class homeownership by identifying weaknesses within the home financing system. Participants made recommendations for increasing homeownership, strengthening the credit system, improving planning and zoning, and rehabilitating older homes (USAEC 2003:3-44).

Federal legislation enacted during the Roosevelt administration attempted to lower the foreclosure rate, stabilize the housing market, and reduce unemployment. The Home Owners Loan Act of 1933 authorized the creation of a corporation to purchase mortgages at risk of foreclosure. The National Industrial Recovery Act authorized the Public Works Administration to fund low-cost housing, slum clearance, and construction of new housing in rural communities (USAEC 2003:3-45; Lusignan et al. 2001:27-8).

3.4.2.5 National Housing Act of 1934

Construction workers accounted for many of the nation's unemployed during the Depression. Harry L. Hopkins, Federal Emergency Relief Administrator, testified to Congress that workers in the

building trades represented the single largest unemployed group in the country. He emphasized that the "fundamental purpose" of the National Housing Act of 1934, which Congress was considering for passage, was employment. The National Housing Act's three goals were to increase homeownership, protect home financing institutions, and stimulate employment in the building industry (USAEC 2003:3-45).

3.4.2.6 Creation of the Federal Housing Administration

The National Housing Act also created the FHA, which directly influenced middle-class homeownership. The FHA supported several changes in the home financing system that made home ownership easier, including long-term loans, low down payments, and regular monthly payments of principal and interest over the life of a loan. Construction projects seeking to qualify for FHA loans were required to meet minimum construction and inspection standards, so the agency influenced house and subdivision design. These policies helped the home construction industry rebound. From 332,000 in 1937, housing starts rose each year and nearly doubled in 1941 to 619,000 (USAEC 2003:3-45).

3.4.2.7 Lanham Act Housing

The Federal government built emergency housing for defense workers and military families during the rapid mobilization for World War II. The Lanham Act, authorized in 1940, was the result of a compromise between the government with an immediate need to house defense workers and the construction industry concerned over government competition. Housing was authorized only in communities where housing shortages impeded defense industries, and where the private sector was unable to meet the housing need. The act authorized a total of $150 million in construction (USAEC 2003:4-2).

Under the Lanham Act, the Federal Works Administrator acquired land and developed construction plans. The average per-unit cost within the developments could not exceed $3,000; no individual unit could cost more than $3,950. These caps later were raised to an average per-unit cost of $3,750 and an individual unit maximum cost of $4,500. Proceeds from rent were used to operate and to maintain the developments. Those eligible for Lanham Act housing included families of enlisted military men, civilian employees stationed at Army and Navy installations, and workers in industries essential to national defense. Nearly one million units were built under the Lanham Act (USAEC 2003:4-2; HHFA 1953a:61).

To address the concerns over competition with the private sector, amendments were made to the Lanham Act in 1943 to prohibit construction under the Act after the war, and it required the demolition of all units within two years following the war. In the Housing Act of 1950, Congress added Title VI to the Lanham Act, which provided a comprehensive plan for disposing of remaining Lanham housing. Disposition was stopped later that year to conserve government resources potentially needed to support the Korean conflict, but resumed in 1953. By 31 December 1953, the government had disposed of 729,000 Lanham Act units and retained 214,000 units (USAEC 2003:4-2; HHFA 1953a:61-2).

3.4.3 Overview of Federal Agencies Affecting Postwar Civilian Housing Markets

3.4.3.1 Federal Highway Policy

The increasing popularity and importance of the automobile strained the nation's road network. The Federal government gradually improved and enhanced the national road system throughout the twentieth century. By the late 1930s, a limited system of national toll highways was proposed to shorten travel times and to provide efficient transportation for national defense. The Federal Highway Act of 1944 authorized a national highway system, but did not include Federal funding or commit the Federal government to building the system. Limited construction was completed; disputes over Federal and state cost-sharing and construction priorities prevented the development of a comprehensive long-term plan. In 1956, President Eisenhower oversaw the development of a "grand plan" for a comprehensive system of national highways funded through a Federal gas tax and state contributions. Bipartisan Congressional support and state agreements enabled passage of the Federal Aid Highway Act of 1956 (Weingroff 1996). Forty-one thousand miles of roads were constructed at a cost $76 billion. This road construction was the biggest public works project in history (Manchester 1973:928). The new highway system further reduced commutes between city and suburb.

3.4.3.2 The Veterans Administration

In addition to the FHA, the Veterans Administration (VA) also provided housing loan guarantees under the Serviceman's Readjustment Act of 1944, known popularly as the "GI Bill." These loans required a five per cent down payment and offered lower interest rates and longer amortization periods than FHA loans. Between 1944 and 1950, loans from these agencies could be combined to purchase a house without a down payment; Federal law was changed in 1950 to prevent combining the two loans (USAEC 2003:3-46).

3.4.3.3 The FHA

The FHA focused efforts on increasing homeownership by the late 1930s and received support from members of the housing industry, including mortgage institutions, builders, real estate companies, and building materials manufacturers. The Federal agency encouraged the construction of suburban houses and discouraged new construction in established urban neighborhoods in large cities or the rehabilitation of older homes. The FHA assessed older and/or racially diverse neighborhoods to be an investment risk (USAEC 2003:3-46).

The FHA also influenced house and subdivision design. To qualify for FHA-guaranteed mortgages, projects were assessed for compliance with agency standards and guidelines for house design, and subdivision planning and development. The FHA issued technical bulletins on the standards and guidelines. The construction industry gradually adopted these requirements for all projects regardless of FHA involvement. The building industry soon recognized that projects adopting FHA standard formulas received quick approvals for guaranteed mortgages. Municipalities and state governments frequently adopted the FHA standards for state and local approvals. The FHA was responsible for the overall design of postwar residential developments through design standards linked to mortgage guarantees (USAEC 2003:3-46, 3-47).

The agency published its first set of minimum housing standards in 1936. These standards recognized five house types ranging from a one-story, two-bedroom bungalow measuring 534 square

feet to a compact, two-story, three-bedroom house. The bungalow, known in the house construction industry as the "FHA minimum house," met minimum standards for light, air, and space, and was popular for its low cost and efficiency (USAEC 2003:3-46; Ames and McClelland 2002). The FHA standards for subdivisions addressed superblocks, greenspace, curvilinear streets, cul-de-sacs, and courts (USAEC 2003:3-47).

The influence of the FHA standards and guidelines upon subdivision and house design extended to military family housing. Rarely innovative in design, materials, and technology, the military relied on precedents established in the civilian construction industry (USAEC 2003:3-47).

3.4.3.3.1 FHA Minimum Property Standards for Single Dwelling Units

While the FHA's minimum standards for single-family house designs ensured a degree of uniformity, local and regional standards also were circulated to address specific housing markets. During the late 1950s, these standards were simplified and standardized on a national level as home building technology evolved, design trends changed, and builders began operating on a national level. The minimum requirement for a single-family house was two rooms with a bathroom. A 10- by 20-foot minimum was established for a single-car garages and carports; an 18-foot, four-inch by 20-foot minimum was adopted for two-car garages. At least 25 per cent of the required storage space was to be located within the house, and 50 per cent was to be located outside the dwelling. Space for laundry facilities also was required. Other changes introduced in the new nationalized standards included requirements for kitchen storage, minimum countertop area, and kitchen shelf spacing (USAEC 2003:3-48, 3-49).

3.4.3.3.1 FHA Minimum Property Standards for Multi-Unit Buildings

The FHA's standards for multi-family units in the 1950s closely reflected those developed for single-family units, with the exception of density. These standards were revised in the 1961 *Minimum Property Requirements for Properties of Three or More Living Units*.

The standards recognized high and medium density development. High-density areas permitted the development of more than 25 units per net acre, but such density was approved based on market conditions or location near established shopping, transportation, and other community services. In addition, the size of the developments was required to exceed the size occupied by housing, presumably to provide greenspace. Medium density was defined as 25 or fewer units per net acre. The standards specified that medium-density buildings must be located in "neighborhoods characterized by detached and semi-detached dwellings, medium- and low-density rowhouses, or two-story garden apartments with 'generous open spaces' " (USAEC 2003:3-49).

The multi-unit standards specified room size and type to ensure adequate light, air, ventilation, privacy, and landscaping. In three- and four-unit buildings, the standards specified that each unit contain at least one bathroom and three habitable rooms including one bedroom. Buildings with more than four units were required to meet similar requirements, but were allowed kitchenettes instead of kitchens. Separate bedrooms were not mandated for efficiency units as long as the units were designed for single occupancy and approved by the Chief Underwriter. Other requirements for multi-unit buildings included: storage, linen, and coat closets; doors on kitchen cabinets; and a minimum storage volume of 150 cubic feet, excluding closets. Laundry facilities could be located within units or in common areas, but several small common laundries were preferred to a few larger ones (USAEC 2003:3-49).

3.4.3.4 The Housing and Home Finance Agency

The Housing and Home Finance Agency, which President Truman established in 1947 to consolidate Federal housing activity, monitored all aspects of the housing industry (Truman 1947). The agency tracked seasonally adjusted annual rates of private non-farm housing starts; the availability of construction funds; the number of requests for FHA applications and VA appraisals; regional trends; and the supply of long-term mortgage funds. Housing starts generally increased during the 1950s. During the earlier years of the decade, housing starts were higher during the spring, summer, and fall than in the winter. During the later 1950s, overall high demand and improved technology increased housing starts during the winter months, although winter weather continued to make construction difficult in the Midwest and Northeast (USAEC 2003:3-50).

3.5 CONCLUSION

The Air Force and the Navy began the postwar period with an unprecedented family housing shortage. This shortage and the condition of the existing housing inventory adversely influenced personnel retention rates. Military leaders sought to address military housing conditions through the addition of units comparable to those found in the civilian market. This housing market was dominated by single-family dwellings built in suburban housing developments and marketed to consumers in an economy characterized by low unemployment, high wages, and disposable income. Government policies and programs actively encouraged home ownership, established standards for the overall design of developments and houses, and set precedents for limited government intervention in that housing industry. These factors influenced the strategies pursued by Congress in providing family housing for the military, including the Air Force and the Navy.

4.0 THE LEGISLATIVE REMEDY: WHERRY AND CAPEHART ACTS

4.1 SUMMARY

The Air Force and the Navy experienced a severe housing shortage following World War II as both services sought to retain highly trained enlisted personnel. These personnel frequently were married and accompanied by dependents.

The Wherry and Capehart legislation provided the vehicles for the Air Force and the Navy to address their housing shortages. Wherry Act and Capehart Act projects were augmented by construction overseen in-house by the military services and funded through site-specific Congressional appropriations.

The implementation of the Wherry and Capehart programs generally was decentralized. The installations worked directly with sponsors and architects to design and construct housing that met the installation's individual requirements. Under the Wherry Act, the developer, or sponsor, constructed and managed the units and retained ownership of the housing. In contrast, the Air Force and the Navy assumed ownership and management of housing built under the Capehart program, after the units were constructed by the sponsor.

The Wherry and Capehart acts were unique in the history of military housing. The programs forged public-private partnerships between the government and private industry. This partnership was facilitated by mortgages guaranteed through the FHA for large-scale construction projects. In many cases, Wherry and Capehart projects were constructed in areas of the country where mortgages for large-scale housing developments would be difficult, if not impossible, to obtain. Installation Commanders, the Bureau of Yards and Docks, Army Corps of Engineers, the FHA, architects, and sponsors worked closely to design and build military housing that was compatible with, and, in some cases, exceeded, housing then available in the civilian housing market. Between 1949 and 1962, an estimated 62,475 Wherry units, 77,208 Capehart units, and 6,607 units of appropriated-funds housing were constructed for the Air Force, the Navy, and the Marine Corps (Table 7).

Table 7. Wherry and Capehart Housing Constructed between 1949 and 1962

Service	Wherry Units	Capehart Units
Air Force	38,014	62,816
Navy	17,434	10,020
Marines	7,027	4,372
TOTAL	**62,475**	**77,208**

Note: See Appendix D for breakdowns by installation
Source: See Page D-1

Because the Wherry and Capehart units were constructed in accordance with FHA standards, they differed little from their private-sector counterparts. The military sought to construct housing that was similar to that found in the private sector as one means of improving morale and increasing retention rates. FHA policies and standards played a large role in the design of Wherry and Capehart housing programs. Although FHA standards were not a DoD requirement for the military construction undertaken by the services using appropriated funds, FHA standards greatly influenced popular expectations for residential design on a national level, and these expectations were reflected in all military housing. The Navy, for example, adopted successful Capehart designs for the construction of housing using funds appropriated by Congress.

Wherry and Capehart family housing also reflected post-World War II policies on public-sector housing and the role of the Federal government in the housing market. The Federal government viewed its role as limited to supporting and to encouraging the private sector in meeting housing

demand, rather than as an active player directly involved in construction or financing. The government sought to eliminate the financial barriers to house construction.

The Wherry and Capepart programs met both military and Congressional objectives: constructing housing equivalent to that found in the private sector; limiting the Federal role and financial commitment; and avoiding direct competition with the housing industry. These programs, supplemented by housing constructed by the military services through Congressional appropriations, were the solution to the military family housing shortage.

Twentieth-century suburbanization influenced the design of Wherry and Capehart era neighborhoods. Design principles adopted during the early twentieth century advocated curvilinear streets and strict avoidance of long, straight blocks. Through streets were eliminated to control traffic, and the creation of green space was encouraged. FHA design standards officially promoted these principles. While neither the Navy nor the Air Force formally adopted the FHA standards for neighborhood planning as military policies, both services advocated for contemporary suburban design applying FHA principles. The Navy referenced the FHA standards in its development design guidelines (Curren 1958; Koski 1960).

Family-friendly development was one of the key features in postwar housing. As more and more Americans had increased leisure time, FHA standards evolved to encourage child-focused development. The FHA encouraged integrating playgrounds and recreation areas in new developments. Navy family housing construction manuals acknowledged that playgrounds were important. Such facilities were constructed in Navy projects as overall costs permitted. While the archival record is unclear on the number of playgrounds that originally were included in initial development, today, many Navy and Air Force Wherry and Capehart era neighborhoods include these features.

Nineteenth-century suburban ideals, improved technology, innovations in transportation, and economic prosperity influenced postwar American society (USAEC 2003:5-2). Americans held a strong preference for single-family housing. This preference also influenced the design of military family housing. Although a few garden apartments were constructed under the Wherry program and selected rowhouses were built under the Capehart program, the overwhelming majority of housing units constructed for the Navy and Air Force under the Wherry and Capehart programs were single-family or duplex units. Both services actively discouraged the construction of multi-family units, a policy for which both services were criticized. The limited number of multi-family buildings constructed for the Air Force and Navy included features generally associated with single-family units, such as front and rear yards, which provided recreational areas for children and ease of supervision for mothers.

Standardization in building materials and construction technologies were a result, in part, of World War II mobilization. The Federal government promoted standardization and modular measure through legislation and housing policies. The Capehart Act and the HHFA encouraged the adoption of standardization (USAEC 2003:5-3). Several public laws, including Public Laws 968 and 1020, mandated modular measure. Under Public Law 968, the military was authorized, "to the extent deemed practicable, use the principle of modular design in order that the facility may be built by conventional construction, on-site fabrication, or factory fabrication" (U.S. Public Law 968 1956:1018). Section 509 of Public Law 1020, required that drawings and plans developed under the Housing Act of 1956, which included Capehart housing, "follow the principles of modular measure" or a combination of prefabrication (U.S. Public Law 1020 1956:1110; USAEC 2003:5-3).

Unlike the Army, the Navy and the Air Force did not develop standardized plans for Wherry or Capehart housing. Rather, each service retained architecture and engineering (architectural and engineering) firms to develop plans specific to their projects. The Navy sought to select architectural and engineering firms with experience designing tract housing because they "know all the short cuts necessary to keep the price of the houses down to the minimum" (Curren 1958). The Bureau of Yards and Docks served as the Navy's construction agent. Unlike the Army Corps of Engineers, the Bureau of Yards and Docks did not adopt standardized plans for Title VIII housing.

The working relationship between the Air Force and the Army Corps of Engineers dates to the transfer of property between the services. A number of transfer agreements between the Air Force and the Army were executed shortly after the Air Force was established in 1947. One such transfer agreement gave the Army Corps of Engineers authority to act as the construction contracting agent for the Air Force (McNeil 1950).

After 1955, the Army Corps of Engineers served as the contracting agent for Air Force housing constructed with appropriated funds. Archival research further suggests that the Wherry program was administered through the Army Corps of Engineers under the close supervision of the Air Force, while Capehart projects were managed directly by the Air Force (Robinson 1956b).

4.2 WHERRY LEGISLATION

4.2.1 Origins of the Wherry Act

Officials of all three military branches as well as the Department of Defense were conscious of the acute shortage of family housing. Military magazines and the popular media documented jarring examples of servicemen and their families living in shabby and cramped housing located far away from their stations. One factor contributing to the housing shortage was the uncertain rental market serving military personnel; lenders and contractors were reluctant to build family housing near military installations because their pool of tenants could decrease through military transfers to other installations or military deployment. In cases where installations were located in isolated areas or small towns, the permanent civilian population was not large enough to provide an alternative rental market. In addition, military installations were subject to closure with changing missions.

The National Housing Act had charged the FHA with determining the acceptable risk for issuing mortgage insurance, and did not contain special exceptions for housing that served military personnel. Therefore, the FHA could not ignore the uncertain status of military personnel and installations; housing projects intended to serve the military were deemed an unacceptable risk (U.S. House of Representatives 1949b:24-25).

Military officials believed that the urgent housing crisis required new legislation. Senator Kenneth Spicer Wherry of Nebraska became interested in the housing problem because military bases within his state were affected by the shortage. On 21 February 1949, Senator Wherry introduced Senate Bill 1184, which proposed authorizing the FHA to insure private rental housing on or near military installations (USAEC 2003:4-4, 4-5).

4.2.1.1 Senator Kenneth Spicer Wherry

The 57-year-old Wherry, who served in the Navy Flying Corps during World War I, was a small businessman and lawyer with local and state political experience. After an unsuccessful run for

the United States Senate, Wherry served as Western Director of the Republican National Committee in 1941 and 1942. He was elected to the United States Senate in 1942 and 1948. A respected Republican, Wherry was Republican Party Whip from 1944 to 1949 and Minority Leader from 1949 to 1951. During his second Senate term, Senator Wherry died in 1951 at the age of 59 (USAEC 2003:4-5, 4-6).

4.2.2 Senate Bill 1184

Senate Bill 1184 was designed to provide investment security for contractors and lenders. The following passage summarized the problem and the proposed solution:

> In order to assist in relieving the acute shortage of housing which now exists at or in areas adjacent to military installations because of uncertainty as to the permanence of such installations and to increase the supply of rental housing accommodations available to military and civilian personnel at such installations, the Commission [FHA] is authorized, upon application of the mortgagee, to insure against default due to deactivation of, or substantial curtailment of activities at, any such installation in any State, any mortgage which is eligible for insurance as hereinafter provided (U.S. Senate 1949b:7-8).

Insurance would be provided by a "Military Housing Insurance Fund" administered by the insuring agency, the FHA, which was authorized to insure a total of $500 million in coverage. By special authority of the President, that amount could increase to $1 billion. The fund would decrease risk for lenders and financial institutions underwriting loans for military rental housing projects in locations that lacked an alternative market to the military. To protect the contractor, referred to as the "sponsor," an appropriate military official would certify that the proposed project met a genuine need for housing, that the installation was a long-term part of the military establishment, and that there was no intention to curtail staffing levels. The FHA would not be required to determine acceptable risk for the projects (USAEC 2003:4-6; U.S. House of Representatives 1949:25).

4.2.3 Revisions to Senate Bill 1184

Several revisions were made to the proposed legislation following Congressional debates during spring and summer 1949. Revisions focused on project cost, maximum allowable insurance levels, location of a project relative to an installation, and utilities.

The maximum allowable per-unit cost was set at $9,000. This figure included expenditures associated with the project, such as land acquisition, physical improvements, utilities, architect's fees, taxes, and interest accrued during construction. Earlier drafts of the legislation permitted the FHA to insure the entire cost of the project, but the FHA objected, favoring a 90 per cent mortgage insurance ceiling so that sponsors would be required to invest some of their own funds. Senator Wherry supported a 95 per cent limit to make the program attractive to builders. Raymond Foley, Administrator for the Housing and Home Finance Agency, countered that the 90 per cent mortgage insurance ceiling contained in the National Housing Act for non-military housing projects was working successfully. In addition, Foley contended, lenders would find the 90 per cent ceiling more attractive and would hesitate to invest in a project in which the contractor contributed less than 10 per cent equity. Finally, because housing developments typically yielded a 10 per cent profit, insuring more than 90 per cent could profit the builder excessively. The final draft of the legislation contained

a per-unit cost specification of $9,000, and a mortgage insurance limit of $8,100, or 90 per cent (USAEC 2003:4-7).

Sponsors under the Wherry Act had two options for locating the projects: to build on private land or to enter into a 99-year lease for government land. Leases were renewable for at least 50 years from the execution of the mortgages. These time frames were intended to provide sponsors with the time to pay off the mortgages and to realize a profit before the land and improvements reverted to the government. The Secretaries of the Army, Navy, and Air Force were authorized to enter into leases with sponsors. Previous Federal legislation allowed the government to revoke leases in times of national emergency, but the Wherry legislation eliminated that option. The Secretaries of the military services also were authorized to sell government utility services to sponsors if such utilities could not be secured from another source (USAEC 2003:4-7).

Although Wherry housing units were not classified as government quarters, the legislation required that projects built under the Act operate under the regulation of the FHA Commissioner, and that occupancy priority be assured for military personnel, civilian employees, and government contractors. The FHA also reserved the right to comment on such aspects of the project as rent, sales, charges, and operations, to ensure rental rates were kept within the quarters allowance of military personnel (USAEC 2003:4-7, 4-8).

4.2.4 Organization of the Wherry Act

President Harry S. Truman signed Senate Bill 1184 into law on 8 August 1949. Officially known as Public Law 211, 81st Congress, the law also is known as the Wherry Act for its sponsor, or as Title VIII for the section of the National Housing Act of 1934, as amended, which established statutory authority. The Wherry Act was scheduled to expire on 1 July 1951 (USAEC 2003:4-11).

The Wherry Act outlined procedures for completing housing projects. Installation Commanders determined housing needs through an analysis of data on existing housing, and current and projected personnel requirements. Commanders used these figures to request a specific number of units. The Secretaries of the Navy and the Air Force were charged with approving, adjusting, or denying installation housing requests. Following approval, installations advertised for bids from interested sponsors. Private contractors submitted proposed designs and cost estimates. In some cases, sponsors retained architects to develop plans for the project. Installations selected contractors who met cost and design requirements. Sponsors were required to demonstrate that they had obtained the necessary funding, and proposals were subject to approval by the Secretaries of the Navy or Air Force, as well as the FHA. The lowest bidders who met the project specifications typically were selected. Following the execution of contracts, construction began (USAEC 2003:4-11).

4.2.5 Wherry Implementation

Both the Air Force and the Navy developed Wherry projects at the installation level. Base Commanders played important roles early in the process and worked closely with headquarters and the FHA to develop Wherry projects that suited their installation's unique needs. Similarities and differences were noted between the two services.

The first housing completed by the Air Force under the Wherry program was a 250-unit project located at Maxwell AFB in Montgomery, Alabama. The Maxwell AFB project was completed in 1950 ("Status of Wherry Act Projects" 1950:1). By 31 August 1951, the Air Force had completed

9,050 family housing units and an additional 17,788 units were under construction. New housing was available for occupancy at a rate of 1,000 a month (Gilpatric 1951:6-7). The first Navy project built under the Wherry program was a 390-unit development located at Severn River Naval Command in Annapolis, Maryland and completed in fall 1951 (Bureau of Yards and Docks 1951a:1; Bureau of Yards and Docks 1951b:3; Bureau of Yards and Docks 1952:1).

Some members of Congress had anticipated that the military housing construction under the Wherry program would proceed more quickly than it actually did. In July 1950, after the Wherry Act had been in place for one year, Brigadier General Colby M. Myers, Air Force Director of Installations, reported to a House of Representatives subcommittee in July 1950 that construction projects were underway at only six Air Force bases. Rep. Robert L.F. Sikes, one of the committee members, complained over the "delay" and questioned why more housing had not been built. Myers responded that technical and administrative delays were the result of the time required to determine which bases were permanent, which bases needed housing, how many units were needed, and how much housing could be absorbed by the community before affecting the private market (U.S. House of Representatives 1950:163).

The Navy's Wherry program proceeded even more slowly. The Annapolis housing development was the only completed project by January 1952. At that time, 11 other projects were under construction, and work was slated to begin on 15 others, providing a total of 11,873 units. However, according to a Bureau of Yards and Docks press release, "The bulk of the program is expected to be completed in 1953." The entire Wherry program was intended to provide 26,173 Navy houses through 76 projects (Bureau of Yards and Docks 1952:1). Ultimately, the Navy completed 64 Wherry projects totaling 24,503 units (Foss 1956:1, 14).

4.2.5.1 The Armed Forces Housing Agency

The Armed Forces Housing Agency was created in 1951 to handle the additional administrative duties required of the Department of Defense as a result of the Wherry Act and other military housing issues. An Assistant Secretary of Defense position was created to oversee the agency; the office reported to the Secretary of Defense through the Munitions Board. Secretary of Defense Robert A. Lovett appointed Thomas P. Coogan, a Navy veteran of World War II with a national reputation in the homebuilding industry, to head the agency. A recent president of the National Association of Home Builders, Coogan provided his expertise in the execution and revision of Title VIII, and advocated building standardization (USAEC 2003:4-14).

4.2.5.2 Department of Defense Instructions for Wherry Implementation

The Department of Defense issued instructions for selecting Wherry sponsors. These instructions applied to all three branches of the armed services. The procedures were developed in an effort to streamline the approval process.

A commission was established in 1950 to review then-current Department of Defense selection procedures for Wherry sponsors. Wherry projects were suspended while the commission and Department of Defense evaluated their operating procedures. In their report, the housing commission noted that the suspension order was not the cause of delay in the Wherry program. Rather, delays were related to cumbersome procedures (Department of Defense Housing Commission 1950:1). New policies developed by the commission were formalized on 2 March 1950 in "An Agreement between the Commissioner of the Federal Housing Administration and the Chairman of the Department of

Defense Housing Commission Concerning the Selection of Sponsors and the Processing of Projects under Title VIII of the National Housing Act (Wherry Act)" (Richard and Giesecke 1950).

The Department of Defense quickly revised instructions for the selection of Wherry sponsors on 27 April 1950. The instructions defined areas of responsibilities for the military services, the FHA, architecture and engineering firms, and sponsors. The Secretaries of the three services were responsible for establishing project requirements and for coordinating the implementation of the Wherry Act within the military. The Secretary of Defense coordinated with the Office of the Comptroller. The services consulted with FHA as criteria for specific projects were developed. The FHA provided data on local housing markets to ensure the "insurability of the mortgage due to market conditions" of the Wherry project (U.S. Department of Defense 1950a:1). The appropriate Washington headquarters were authorized to settle disputes between the FHA and the installations arising from disagreements on the available rental housing (U.S. Department of Defense 1950a:1).

The Secretaries of the Air Force and Navy were tasked with developing directives for the Chief of Engineers and the Chief, Bureau of Yards and Docks, respectively. Representatives of the Chief of Engineers and the Chief, Bureau of Yards and Docks collectively were known as the military field office. The directives did not specify whether the military field office would be staffed at the installation, regional, or national level (U.S. Department of Defense 1950a:1).

The Secretary of Defense approved funds drawn from public works appropriations for initial payment of architectural and engineering services, FHA Appraisal and Eligibility Statement processing fees, and the costs associated with the acquisition of land for off-base Wherry sites (U.S. Department of Defense 1950a:5). Architecture and engineering firms for Wherry projects were selected from a list of qualified firms experienced in the design of FHA rental housing projects. This list was prepared by the FHA (U.S. Department of Defense 1950a:2). The military field office negotiated contracts with successful architectural and engineering firms to develop plans and specifications for specific projects. Architectural and engineering contracts granted the government permission to reuse plans and specifications in other housing projects without additional compensation (U.S. Department of Defense 1950a:2). This last provision supported the DoD direction to apply previously developed plans and specifications to the extent practicable (U.S. Department of Defense 1950a:3). The Air Force and Navy delegated final approval of architectural and engineering contracts for Wherry housing projects to the Chief of Engineers and the Chief, Bureau of Yards and Docks.

The initial plans developed under an architectural and engineering contract specified the number of units, the number of bedrooms per unit, and the average maximum gross rent per unit. Schematic plans were developed to the degree of detail sufficient to enable FHA review and the issuance of an Appraisal and Eligibility Statement. Such statements included estimated total replacement costs, the maximum allowable insurable mortgage, and the maximum allowable rental schedule (U.S. Department of Defense 1950a:2). If submitted plans did not meet FHA requirements, architectural and engineering firms were responsible for revisions at no additional cost to the government. After the FHA approved the proposed plans, the agency billed the appropriate service at a rate of $1.50 per $1,000 of the amount of the insurable mortgage (U.S. Department of Defense 1950a:3).

The military field office requested proposals from sponsors after the FHA issued the Appraisal and Eligibility Statement. The sponsor, in response to the invitation to bid, was required to submit information on rental schedules and the maximum amount of insurable mortgage, to deposit funds in an escrow account, and to reimburse funds for use of the architectural and engineering plans (U.S. Department of Defense 1950a:3,4). The sponsor ultimately selected for a project negotiated the terms of applicable leases, utilities contracts, and other pertinent details with the military field office (U.S.

Department of Defense 1950a:4). The military field office selected the sponsor with the lowest responsive bid proposal.

The FHA inspected Wherry projects to insure that the sponsor complied with FHA rules and procedures. The FHA advanced funds to project sponsors for the reimbursement of architectural and engineering costs with the sponsor's first project payment (U.S. Department of Defense 1950a:5).

In 1950, Secretary of the Air Force Stuart Symington notified the Housing and Home Finance Agency that the "technical and administrative procedures were unduly burdensome to and beyond the capabilities of the Department of the Air Force" (McNeil 1950). For this reason, the Air Force sought to transfer responsibility for reviewing Wherry projects to the FHA (McNeil 1950). Instead, the Army Corps of Engineers assumed the construction agency role for the Air Force as well as maintained administrative control over the Wherry program (McNeil 1950). The Secretary of the Air Force issued a directive to the Chief of Engineers to develop a specific project. The directive identified the base housing need, the type of housing units requested (single-family, duplex, or multi-family), information on the site, utilities, and rental rates. The Air Force and the Army Corps of Engineers ultimately developed coordination procedures that were nearly identical to those developed by the Secretary of Defense in April 1950.

4.2.5.3 Air Force Implementation of the Wherry Act

While Wherry legislation was debated in Congress, the Department of the Air Force developed guidelines for the anticipated program. A memorandum written by Major General McKee, Assistant Vice Chief of Staff, which was circulated to all Commanding Generals of the Major Commands, outlined the development procedures. Under the proposed procedures, the Department of the Air Force provided approved prospective sponsors with letters of introduction to Base Commanders. Bases would then compile the following data for the sponsor: numbers of personnel by income bracket requiring housing; the on-base locations available; a list of on-site utilities; and topographical maps. These data were used to develop preliminary plans for submission to Air Force headquarters by the Base Commander (Department of the Air Force 1949a:3).

Sponsors were required to provide at least one airman's unit for each officer's unit in their preliminary plans (Department of the Air Force 1949a:4). The following criteria for housing units were established: twenty per cent of the airmen units were to be one bedroom, thirty per cent of the units were to be two bedroom, and fifty per cent of the units were to be three bedroom. Twenty per cent of the officers' units were to be one bedroom, thirty per cent were to be two bedrooms, forty per cent of the units were to be three bedrooms, and ten per cent were to be four bedrooms (Department of the Air Force 1949a:4).

Construction standards and spatial requirements that met or exceeded those proscribed by the FHA were specified; sponsors were directed to apply Section 608 housing construction standards in the development of Wherry housing. Building designs generally were to be compatible with the design of the base and the area (Department of the Air Force 1949a:5). The Air Force would consider proposals for both multiple-unit dwellings and single-family houses.

Air Force headquarters approved the project proposals and negotiated leases for on-base housing projects. Base Commanders submitted comments on the proposals to headquarters along with information on the adequacy of existing utilities (electric, gas, sewer, and water). Information on the community was developed to support decisions on plans proposing off-base development (Department of the Air Force 1949a:6).

Many of the preliminary procedures developed by the Air Force prior to the passage of the Wherry legislation were formally codified in Air Force Regulation 93-7, *Installations – Control Procedures, Air Force Implementation of Title VIII of the National Housing Act* (Department of the Air Force 1949c). The regulation defined responsibilities for both the sponsor and the Base Commander. Base planning boards represented the Installation Commanders, compiled information on the base and housing need, and provided assistance to sponsors (Department of the Air Force 1949c:3). Base Commanders assessed the compliance of proposed projects with the base master plan for housing in their recommendations to headquarters (Department of the Air Force 1949c:5).

Shortly following the enactment of the Wherry Act, the Air Force explained its internal process for selecting Wherry sponsors in response to inquiries from members of Congress. Major General T. D. White, Director of Legislation and Liaison, outlined Air Force Wherry procedures in a memorandum to the Assistant Secretary of the Air Force, Eugene Zuckert. Sponsors interested in the Wherry program submitted their credentials for review and approval to the Air Force Housing Office. The Housing Office then referred qualified sponsors to the Base Commanders. The Housing Office was created within the Directorate of Installations for the purpose of monitoring the Wherry housing program. The office was responsible for qualifying sponsors, negotiating contracts, approving final plans, assisting in financial arrangements, approving rental schedules, and assisting in FHA approval (McKee 1949:2-6). A centralized office was deemed necessary to avoid duplication of effort and to expedite projects (McKee 1949:3). Major Commands were encouraged to work with the Housing Office in the development of Wherry projects (McKee 1949:3).

Sponsors submitted two copies of their project proposals to the Base Commander by an established deadline. One copy was forwarded to the Housing Office and the second copy was circulated locally to all concerned parties for review and comment. The Base Commander reviewed and ranked all proposals submitted by qualified sponsors. Ranking was based on compliance with applicable FHA rules and regulations; compliance with Department of the Air Force, Command Headquarters, and Numbered Air Force rules, directives, and procedures also was taken into consideration. The Air Force took site and utilities into consideration in their evaluation. The Air Force also scrutinized the type of units (single-family, duplex, or multi-family) proposed as well as the neighborhood design, including density, plan, sidewalks, streets, parking, landscaping, playgrounds, community facilities, and street lighting. Durability of construction and future maintenance were considered. Livability assessments were made, and considered such elements as square footage, plan, light and ventilation, general storage, furnishability, kitchen design, adequacy of laundry facilities, and mechanical equipment. Special features in the proposals also were factored. These features included fireplaces, terraces, garages, carports, extra bathrooms, air conditioning, kitchen fans, attic fans, garbage disposals, automatic washing machines, Venetian blinds, built-in furniture, electric dishwashers, sunken garbage cans, and shower/tubs (U.S. Air Force n.d.b:Part V, 2).

Proposals forwarded to the Housing Office first were reviewed by staff architects and then reviewed by the Air Force Housing Evaluation Board. The board made recommendations to the Director of Installations for the selection of projects and associated sponsors. The Secretary of the Air Force issued letters of acceptance to the sponsor. The sponsors then were notified to negotiate with the local office of the FHA (White n.d.).

Questions over proposal closing dates and Wherry sponsors selection plagued the Air Force. In a 19 October 1949 memorandum, the Air Force defended its selection policy. Major General Newman clarified that projects were selected on merit; tied proposals were awarded to local contractors (Newman 1949:1). In response to the criticism that the Air Force had not developed standardized plans, Major General Newman responded that the development of standardized plans was outside the scope of the Wherry Act. Furthermore, the Air Force did not have the expertise available

to develop plans within a reasonable time frame, and resources had not been appropriated for that purpose (Newman 1949:1).

Major General White noted the concern expressed by some members of Congress over Air Force procedures for selecting sponsors (White n.d.). Senator Long of Louisiana contended that the Air Force should have developed standardized plans for potential sponsors. Major General White reiterated Major General Newman's earlier comments: the Air Force did not have the expertise or the financial resources to develop standardized drawings. Major General White emphasized that proposals were not only evaluated for design, but also for the sponsor's ability to construct, operate, and maintain the units over an extended period of time. Major General White asserted that the Air Force role was to determine the proposals' "adequacy" under the Wherry legislation (White n.d.).

Some members of Congress attempted to influence the selection of Wherry sponsors and sought to ensure that local contractors were awarded Wherry projects. Commenting on a conversation with Senator Lister Hill of Louisiana, Assistant Secretary of the Air Force Harold C. Stuart recounted that Senator Hill was concerned about the selection process. The Senator wanted a local construction company, Roberts and Long, to be awarded the construction of Wherry units at Brookley Field instead of a regional firm, Shelby Construction. In his conversation, Stuart reviewed the five criteria for selecting sponsors. The most important criteria were the type of dwelling unit (single-family, duplex, multi-family, etc.), the number of bedrooms, and the distribution of units between airmen and officers. The Air Force also took into consideration the "space rent index," which included the size of the refrigerator and whether utilities (gas, electricity, water, heating, sewage, refuse collection, ground maintenance, garage, heat, etc.) were included in the proposal. Site planning also was evaluated. Site features, including arrangement of the buildings, the number of units per acre, sidewalks, streets, parking, playgrounds, street lighting, and landscaping, were considered. Durability of construction, equipment, and maintenance were factored into the evaluation. Finally, the Air Force considered the spatial arrangement of the units. Light, air, and ventilation were reviewed (Stuart 1950:1). The Air Force goal was to obtain the most product for the least amount of money, while insuring that projects met all the criteria (Stuart 1950:1).

In addition to Congressional inquiries, problems also arose when potential sponsors received inaccurate information on site conditions from Base Commanders. In some instances, Base Commanders suggested areas on the base for Wherry housing that were already occupied by buildings essential to the base mission, or which lacked utilities (White n.d.). Existing utilities were a major concern and a prerequisite for Wherry projects.

Major General White closed his memorandum by noting the pressure exerted on the Wherry program. The Bureau of the Budget and the Secretary of Defense demanded project competition without criticism. The subordinate commands wanted higher standards, which were sometimes beyond the scope of the Act. The local communities wanted to keep rental markets inflated. There were demands from sponsors to complete projects quickly, cut corners, and realize a profit. Congress pressured the military to solve the housing problem to stem public criticism over the lack of adequate military housing (White n.d.).

Construction of Wherry projects was restricted to permanent installations with no plans for downsizing. The Office of the Vice Chief of Staff was responsible for monitoring all dealings with sponsors and for executing all final actions and agreements. The housing projects had to be constructed in compliance with the base master plan. In addition, the units were required to be of an acceptable size and design, and the proposed project was to be sited in an economical and convenient location. The proposed sponsors were required to make site visits to the bases and discuss potential

problems with Base Commanders in order that proposals might reflect base requirements (McKee 1949:1).

Owing to the maximum rental rates imposed by program mortgage restrictions, the Air Force viewed Wherry housing as best suited to the needs of junior officers and airmen. The rents that airmen could afford limited the quality of Wherry projects (U.S. Air Force 1950:1). The average airmen could afford $60 a month in rent plus utilities. Rents exceeding $75 a month were deemed excessive (U.S. Air Force 1950:1). The average junior officer could afford $80 to $85 a month in rent including utilities (U.S. Air Force 1950:1).

Rent collected for Air Force Wherry projects was used to cover the following expenses: (1) debt service, which paid for construction costs; (2) operating expenses, including management, maintenance, and repair; (3) reserves for replacement of equipment; (4) taxes, if applicable; (5) a vacancy factor calculated at seven per cent; (6) profit; and (7) utilities (U.S. Air Force 1950:1). The Air Force recommended the calculation of rental returns before a sponsor's proposal was accepted so that the Wherry mortgage limitations were not exceeded (U.S. Air Force 1950:1).

It was Air Force policy that off-base Wherry housing projects were subject to local taxes, while those built on base were not required to pay local taxes (U.S. Air Force 1950:1). The Air Force reached the conclusion that the tax implications of off-base housing resulted in "unattractively small in living accommodations or very high in rent or both" (U.S. Air Force 1950:1). High-cost projects were those subject to local taxes (U.S. Air Force 1950:1). Off-base Air Force Wherry projects included housing at Great Falls AFB (renamed Malmstrom AFB in 1956), Maxwell AFB, Oxnard AFB, and Kelly AFB.

Major Commands were directed to undertake a number of initiatives to prepare for meeting with potential sponsors. A list of bases was developed that prioritized the most urgent housing needs; Major Commands undertook planning accordingly. Major Commands determined the number of units needed, selected proposed sites, determined whether the site had adequate utilities, and was prepared to "recommend architectural treatment of individual units and layout of the project" (McKee 1949:2). Each Major Command was to appoint a liaison officer to coordinate the housing program with the Office of the Vice Chief of Staff (McKee 1949:2).

In a memorandum issued to the Commanding Officers of Air Force bases, the Department of the Air Force directed strict confidentiality in reviewing Wherry proposals. Reviewers were asked to ensure that the proposals submitted by one sponsor were not inadvertently shared with another sponsor (Department of the Air Force 1949b:1). All review comments and recommendations were considered classified and were "handled under 'RESTRICTED' security classification" (Department of the Air Force 1949b:2).

4.2.5.4 Navy Implementation of the Wherry Act

Previous Navy efforts to address the family housing shortage resulted in austere, minimal accommodations such as trailers, Quonset huts, and converted World War II temporary housing ("Title 8 Housing Program" 1949:2; Bureau of Yards and Docks 1950:2). Preliminary procedures for implementing the Wherry program first were outlined in October 1949, shortly after passage of the Wherry Act. Navy procedures for the selection of sponsors called for public notification of proposed projects; interested parties submitted expressions of interest to the Department of the Navy. These submissions were reviewed and sponsors were pre-qualified based on construction and management qualifications. Pre-qualified firms were requested to submit specific proposals. These proposals were

reviewed at the installation level and forwarded to the Title VIII Housing Board at the Bureau of Yards and Docks. Upon submission to the Bureau of Yards and Docks, the proposals were forwarded to the FHA for further evaluation and ultimate selection (Korink 1949:1).

The DPWO consulted with the appropriate FHA Field Office to ensure proposal compliance with FHA requirements and to ensure that the proposal was feasible and that the appropriate rent levels were achieved. FHA comments and concerns were forwarded to the Bureau of Yards and Docks (Korink 1949:102). The DPWO reviewed and analyzed new Wherry projects; maintained up-to-date information on the development and management of Wherry projects; provided guidance; and served as liaison to Naval Activities within the Naval District, the Commanding Officers, the Wherry sponsors, the tenants, and the FHA (Bureau of Yards and Docks 3-20 – 3-24).

It was Navy policy to contract with private sector architectural and engineering firms to design Wherry projects, except in cases where the sponsor provided drawings and specifications. Wherry projects were viewed by the Navy as the preferred method of providing family housing where possible (Bureau of Yards and Docks 1954:3-2, 3-3).

The DPWO and the Installation Commander commented on the merits of the proposals; these comments were forwarded to the Title VIII Housing Board. The Title VIII Housing Board selected the successful sponsor. Navy housing construction and size standards met those prescribed by the FHA. Other specifications for family housing, such as materials, and amenities were not identified in Navy procedures; however, four-bedroom units were prohibited. Each project proposal was to comprise one-bedroom units (20 per cent), two-bedroom units (60 per cent), and three-bedroom units (20 per cent) for occupancy by officers, enlisted personnel, and civilians (Korink 1949:3).

The Navy instructed District Commanders and DPWOs that the lowest practicable rent per dwelling unit was desired for enlisted personnel; an average rental rate for enlisted men was established at $45 per unit per month (Korink 1949:3). Allowable monthly rental rates for officers included rent and utilities (Korink 1949:3). The average monthly rental rate, including utilities, for civilians could not exceed an established percentage of the average monthly income of the civilians occupying the units (Korink 1949:3-4).

Officer housing was anticipated to be larger and to include more amenities than housing designed for enlisted personnel. The Navy recognized distinctions between housing constructed under the Wherry program and housing constructed by Navy Public Works using appropriated funds. Primarily, the square footage for the Public Works housing for enlisted personnel and junior grade officers was greater than that allowed under the Wherry program, "with consequent increased livability" (Korink 1949:5). In addition, Public Works housing generally was constructed under "more rigid design, material and workmanship specifications, and construction proceeds under closer government inspection than maybe expected for Title VIII housing" (Korink 1949:5). Wherry sponsors were required to identify on the floor plans the location of storage and laundry facilities, as per Navy instructions. The lack of such facilities were factors in judging the merits of a proposed project (Korink 1949:5).

Proposed Wherry sites, both on or off base, were approved by the Commanding Officer of the installation and the FHA Field Office. Site selection was completed before sponsors developed project proposals. The District Commandant and the DPWO assessed the adequacy of commercial and community services including stores, recreation facilities, churches, and schools in determining the potential viability of a proposed Wherry housing neighborhood. The FHA Field Offices approved proposed Wherry sites for adequacy in topography, drainage, and other physical characteristics that

could affect project cost and maintenance before the Navy solicited proposals from sponsors (Korink 1949:8).

The Navy selected the sites and designs for the Wherry projects. The units were built to Navy specifications, with rental rates established by the Navy and the FHA (Bureau of Yards and Docks Press 1952:2). Rental rates were based on income, which was "based on the pay grades of the personnel attached to the particular installation at which the housing will be constructed" ("Title 8 Housing Program" 1949:1).

In a memorandum from G.T. Korink to Lieutenant Colonel W.J. Battison, Jr. of the Munitions Board dated 12 October 1949, Mr. Korink noted that the Navy had not developed a policy regarding utilities. Payment responsibility for the utilities was decided on a case-by-case-basis.

The Navy developed lease and utility agreements that differed from those adopted by the Air Force and the Army. The Navy determined that the Air Force and Army forms prepared under the Title VI housing program were unacceptable in "form and in substance" (Jelley 1949:1). Under the agreement negotiated with the FHA, the Navy leases afforded greater protection from direct and third party liability, and maintained a substantial measure of control over maintenance, repair, and operation of housing units during the length of the FHA utility lease (Jelley 1949:1). In addition, the Navy utility contracts extended to special services, such as police and fire service, for as long as the housing project remained in service to the local Naval Activity (Jelley 1949:1).

Navy leases with Wherry sponsors were negotiated with the following terms: leases extended for 75 years; tenancy priority was granted to Navy personnel; a one-year leases were acceptable for non-Navy personnel with the provision that the lease could be terminated during a national emergency; rental rates were determined by the FHA during the FHA mortgage guarantee period and by the Navy after the FHA guarantee period expired; maintenance, repair, and operation regulations were to be undertaken in accordance with FHA regulations and with Navy standards after the FHA guarantee period expired; the Navy was indemnified against direct and third party liability; and the lease could be terminated if the project was not started, or defaulted, after the FHA mortgage guarantee period (Jelley 1949:2). The utility contracts were similar to the land lease agreements with the added provisions for fire protection, and police services (Jelley 1949:3). The Navy recognized that the leases and utility contracts conferred a degree of control over the housing projects to the FHA during the length of the mortgage guarantee.

Navy Wherry procedures were updated with the technical publication, *Housing Administration,* which was issued in 1954. Under the revised procedures, the Commanding Officer of an installation initiated a Wherry project. The DPWO was responsible for determining the degree of need through the execution of a housing survey. The DPWO and the Commanding Officer consulted with the regional office of the FHA. Tentative site selection was made by the DPWO. The Commanding Officer and the DPWO then submitted a request to the Secretary of the Navy describing the need for housing and details on proposed sites and utilities. The Bureau of Yards and Docks and the Bureau of Naval Personnel then reviewed the project. If approved, the request was forwarded to the Secretary of the Navy for final approval. At this stage, the project became an official Wherry project (Bureau of Yards and Docks 1954:3-21).

The Bureau of Yards and Docks issued approval through a letter of instruction to the DPWO. The letters included information on the number of units by rank, and in some instances, preliminary approvals for proposed sites and utility arrangements (Bureau of Yards and Docks 1954:3-21). Concurrently, the DPWO conferred with the local office of the FHA to determine project feasibility and the necessity to retain an architectural and engineering firm. After the selection of the

architectural and engineering firm, the DPWO and the FHA worked together during the design phase. Once plans were completed, the FHA approved the drawings and issued an Appraisal and Eligibility Statement. Upon issuance of the Appraisal and Eligibility Statement, bids were solicited. Sponsor proposals were reviewed by the DPWO and the FHA; the DPWO made the final selection. After the sponsor obtained an FHA-guaranteed mortgage, construction began (Bureau of Yards and Docks 1954:3-21, 3-22).

Shortly after passage of the Wherry Act, the Navy anticipated the construction of 20,000 to 25,000 units at an estimated cost of $170 million to $200 million ("Title 8 Housing Program" 1949:1). In 1950, the Navy expected to construct 25,000 Wherry units representing fifty projects (Bureau of Yards and Docks 1950:2).

The majority of the units were constructed for enlisted personnel and junior officers. By 1950, twenty-two projects containing 10,091 units were authorized, including 5,792 for enlisted personnel and 1,725 for officers (Bureau of Yards and Docks 1950:2). The Navy also allowed civilians to occupy Wherry housing in cases where the stations were geographically isolated and private sector housing was not available.

By July 1951, the number of proposed Navy Wherry housing projects had increased to 61 and all but five were in the design phase or under construction (Bureau of Yards of and Docks 1951a:1). The 61 projects were expected to create 22,849 units; the sponsors for thirteen projects had been selected (Bureau of Yards and Docks 1951a:1). The earliest project completed included the 390 units located at the Severn River Naval Command, Annapolis, Maryland (Bureau of Yards and Docks 1951a:1). The Navy estimated the cost of construction per unit at $7,500 (Bureau of Yards and Docks1951a:1).

By October, the Navy had 14 projects under award to sponsors, another 42 under development, and 8,165 units under construction (Bureau of Yards and Docks 1951b:2). In 1951, the most ambitious Wherry project in the Navy was slated for Marine Air Corps Station, Cherry Point, North Carolina. This project called for the construction of 1,482 units (Bureau of Yards and Docks 1952:1). By the end of the Wherry program, the Navy constructed 64 Wherry projects totaling approximately 22,500 units (Meade 1956:5).

4.2.5.5 Marine Corps Implementation of the Wherry Act

The Marine Corps process for approving Wherry projects was outlined in the Department of the Navy Bureau of Yards and Docks technical publication *Housing Administration*. The Commandant of the Marine Corps or the Chief of the Bureau having authority over management of family housing was responsible for several functions regarding the implementation of Wherry projects. The Commandant or the Bureau Chief certified the permanency of the installation; recommended approval or disapproval of a proposed project; and recommended the total number of Wherry units needed to meet the long-range housing needs at an activity (Bureau of Yards and Docks 1954:3-33). In addition, the Commandant or Bureau Chief commented on the average monthly gross rent recommended by an activity Commanding Officer (Bureau of Yards and Docks 1954:3-33). The rent was based on the rank and occupants: senior officers, junior officers, enlisted personnel, and civilians. The Commandant or Bureau Chief also approved or rejected the sites proposed for Wherry projects.

4.2.5.6 Summary Comparison of Wherry Implementation among the Services

The services developed similar implementation policies. The Department of Defense assigned areas of responsibility to each party involved in a Wherry project. For example, the FHA was responsible for ensuring that projects met FHA standards. However, the base commander, in consultation with the Department of Defense and the FHA, was responsible for establishing base housing need. The services had similar steps for getting from Congressional approval to completion of construction, but the ways each service accomplished those steps varied. All services took steps such us consulting with the FHA and reviewing projects for compliance with base housing needs. But the services differed in accomplishing these steps, as follows: The Air Force Housing Office and the Air Force Base Commander worked together; the Navy District Public Works Officer (DPWO) had most of the responsibility while the Base Commander had limited responsibility; and the Commandant of the Marine Corps handled all aspects of a Wherry project.

Air Force Base Commanders worked directly with the Air Force Housing Office, and these two entities represented the Air Force to the sponsors. The Air Force Housing Office qualified sponsors, negotiated contracts, approved final plans, assisted with financial arrangements, approved rental schedules, and assisted with FHA approval. Air Force Base Commanders provided base-level data and assistance. They provided information on existing utilities; assessed compliance of proposed projects with the base master plan; reviewed and ranked proposals; and conducted site visits with potential sponsors to review base requirements.

The Navy's administrative structure was more complex. Therefore, much of the responsibility for developing, designing, and implementing Wherry projects rested with the DPWO and the District Commander, rather than with the Installation Commander. The DPWO consulted with the appropriate FHA Field Office; reviewed and analyzed new Wherry projects; maintained current information on the development and management of Wherry projects; and served as liaison to Naval Activities, Commanding Officers, Wherry sponsors, tenants and the FHA. Together with the Installation Commander, the DPWO commented on Wherry projects. However, as the Navy's Wherry program evolved, the Commanding Officer played a larger role. The DPWO and the Commanding Officer consulted with the regional office of the FHA and submitted a formal request to the Secretary of the Navy for a Wherry project. The DPWO's role also grew; its added responsibilities included determining the degree of housing need, making tentative site selections, and selecting the sponsor.

In the Marine Corps, responsibility for implementing Wherry projects rested with the Commandant of the Marine Corps or the Chief of the Bureau. They certified base permanency; recommended approval or disapproval of a proposed project; recommended the total number of housing units needed; commented on the average monthly gross rent; and approved or rejected proposed sites.

4.2.6 The 1951 Military Construction Bill

The 1951 Military Construction bill passed in Congress authorized appropriated funds for land acquisition, installation of outside utilities, and site preparation for the construction of Wherry housing projects (Bureau of Yards and Docks 1951b:1). Rising real estate costs, costs associated with site preparation, and the desirability of locating housing projects on sites lacking public utilities contributed to the inability of sponsors to construct units meeting the maximum rental rates (Bureau of Yards and Docks 1951b:1). To address these issues, Congress added an average of $1,000 per unit to all Navy Wherry projects. Funds were used for site development and utilities, enabling sponsors to construct Wherry housing within the service's ability to pay (Bureau of Yards and Docks 1951b:2).

Furnishing Wherry rental units also was recognized as an issue. The Navy provided furniture for the tenants of Wherry units using appropriated funds.

4.2.7 End of the Wherry Program

Problems in implementing the Wherry Act surfaced as sponsors discovered loopholes in the law that allowed them to avoid investing equity in projects, and to manipulate the mortgage insurance ceiling to realize higher profits than Congress intended. Based on an estimated per-unit replacement cost of $9,000, the Wherry Act authorized mortgages for 90 per cent of the construction cost, or $8,100. It was assumed that a sponsor would obtain an $8,100 per unit mortgage and invest their own funds to finance the remaining 10 per cent. The legislation anticipated that mortgages and private investment would be paid back and profits would be realized through monthly rental income. Rental rates set by the FHA included a six per cent profit for developers; after amortization of the mortgage and builder's investment, rent would be almost entirely profit. However, sponsors often constructed projects for less than the approved mortgage to their great financial advantage. This practice was called "mortgaging out."

Builders became substantially less interested in participating in the Wherry program when Congress enacted a law to stop mortgaging out. Public Law 94, passed on 30 June 1953, required sponsors to inform the FHA of the actual cost of their projects, including "kickbacks, rebates, and normal trade discounts received," and to repay lenders when mortgages surpassed actual costs. The Wherry program became even more unpopular when Congress enacted Public Law 560 in August 1954 to provide another safeguard. Builders were required to certify that their mortgages represented no more than 90 per cent of the cost of the project. The number of Air Force and Navy Wherry projects authorized and built after 1954 dropped dramatically, as illustrated in Table D.1 in Appendix D. The Wherry Act expired on 30 June 1956 (USAEC 2003:4-14, 4-15).

An analysis of the Wherry units constructed by the three services illustrated that the Air Force spent the most money on its Wherry housing and consequently, had the largest units. The Navy spent the least and had the smallest units. The Army's Wherry housing fell between the Air Force and the Navy in size and expenditure. At an average of approximately 768 net square feet, the Navy Wherry units were the smallest of the three services (U.S. House of Representatives 1959c:1954). The Air Force and Army units were similar in size, 835 net square feet and 831 net square feet respectively (U.S. House of Representatives 1959c:1954). The report also noted that the Navy spent the least on its Wherry housing and had the lowest FHA-estimated replacement costs. The average mortgage for Navy Wherry units was $7,539 and the replacement costs were estimated at $8,880 per unit by the FHA (U.S. House of Representatives 1959c:1954). The Air Force had the highest estimated replacement costs and average mortgage, $9,622 and $8,237 respectively (U.S. House of Representatives 1959c:1954). The Army's estimated replacement cost of $9,454 fell between those of the Air Force and the Navy. The Army's average mortgage of $8,314 was the highest of the three (U.S. House of Representatives 1959c:1954).

Congress had authorized the use of appropriated funds for site acquisition and on- and off-site improvements. The cost for these improvements could not exceed $1,500 per unit. At $289 per unit, the Navy spent the most in appropriated funds; the Army spent $105 and the Air Force spent $168 (U.S. House of Representatives 1959c:1954). The Navy constructed the smallest Wherry units for the least amount of money.

4.3 CAPEHART LEGISLATION

4.3.1 The Call for New Title VIII Legislation

Congressional leaders advocated for new Title VIII legislation during the mid-1950s. Enactment of anti-windfall legislation in 1953 and 1954 and the construction industry's waning interest in the Wherry program prompted Congress to consider modifications to Title VIII. Although Wherry Act housing greatly eased the military's family housing shortage, the need for family housing remained acute. Several factors continued to pressure existing family housing inventory. These factors included increased demand related to the Korean Conflict and intensifying Cold War tensions (USAEC 2003:4-15). Compounding the housing shortage was the rapid deterioration of World War II temporary housing. By 1955, these units had long out-lived their life expectancy, were severely deteriorated, and in many cases, unfit for habitation (USAEC 2003:4-2).

To help address the housing shortage, Congress passed a massive appropriations bill. Among the provisions was authorization for 6,429 housing units for the Air Force and 1,419 units for the Navy and Marines (U.S. Public Law 765 1954:1325-30). Not all of the units that were authorized received funding for construction. Congress, however, continued to believe that the most efficient, cost-effective method for solving the military's housing crisis was through Title VIII housing. Senator Homer Earl Capehart of Indiana introduced new Title VIII legislation in Congress. Senator Capehart had closely followed the progress of the Wherry Act. His new legislation sought to address the shortfalls of the Wherry legislation and to renew private sector interest in building housing for the nation's military families.

4.3.1.1 Senator Homer Earl Capehart

Senator Capehart, a self-made millionaire, ran for United States Senate in 1944 on the Republican ticket. Elected to three terms in office, he served between 1945 to 1963. As a supporter of anti-interventionist foreign policy, Senator Capehart was opposed to "big government." Senator Capehart served on the Joint Committee on Defense Production, 83rd Congress, and the Committee on Banking and Currency, 83rd Congress. He unsuccessfully ran for a fourth term in office. He returned to Indiana where he pursued his interests in farming, manufacturing, and investments (USAEC 2003:4-16).

4.3.2 Terms of the Capehart Act

Signed into law on 11 August 1955, the Capehart Act (Public Law 345) officially was titled "Title VIII – Armed Services Mortgage Insurance Act." (Like Wherry housing, Capehart housing also is popularly referred to as Title VIII housing or by its public law number). The legislation was nearly identical to the Wherry legislation, with two major differences: (1) housing was built exclusively on government-owned land, and (2) units were turned over to the government upon completion. The government managed and operated the units. Capehart housing was administered as assigned public quarters.

By acquiring the Capehart units, the government hoped to eliminate several problems associated with Wherry housing, including unforeseen rent increases, vacancies, and the failure of the sponsor to maintain the developments (USAEC 2003:4-16). Under the Capehart program, the FHA insured 25-year mortgages that covered 100 per cent of the project's construction cost. The average cost per unit was capped at $13,500 and included the sponsor's profit. To eliminate windfall profits,

all projects were subject to the Renegotiations Act of 1951. The Act authorized the government to recover excessive profits (USAEC 2003:4-16).

The Navy and the Air Force hired private-sector architectural and engineering firms to design the housing. After the projects worked their way through the chain of command from the installation to the appropriate service Secretaries, the Secretary of Defense, and the FHA, competitive bids for the projects were solicited. Awards were issued to the lowest bidder meeting the basic project requirements. These requirements included number of units, number of bedrooms per unit, ratio of officer housing to enlisted-personnel housing, and average square footage. Added-value features, such as garages and appliances, were considered in the evaluation. Once the FHA approved the sponsor, the projects proceeded. Base Commanding Officers maintained continual oversight and review over Capehart projects.

Sponsors created stockholding corporations at the start of each project. After project completion and government turnover, the military service continued to pay interest and amortization on the project loan with funds from service members' basic allowance for quarters (BAQ). Military personnel assigned to Capehart housing forfeited their BAQ. The average BAQ payment could not to exceed $90 per unit per month (USAEC 2003:4-17). Civilian personnel entitled to live in Capehart housing paid a monthly rental fee, which was applied towards the mortgage amortization. The Capehart Act was initially scheduled to expire on 30 September 1956, thirteen months after it was enacted.

4.3.3 Implementation of the Capehart Act

Personnel entitled to Capehart family housing included married officers, married warrant officers, and married enlisted personnel with E-7, E-6, or E-5 ratings, or personnel with an E-4 rating and more than seven years of service. Key civilian personnel also qualified for Capehart housing if they resided on-base through military necessity (Bryant 1957:1). The Air Force and the Navy developed separate policies and procedures for implementing the Capehart housing program.

4.3.3.1 Air Force Implementation of the Capehart Act

Early in the Capehart program, the Deputy Special Assistant for Installations acknowledged that information on the new Title VIII program (the Capehart program) was not being disseminated to base officials. Although information had been provided by the Air Staff to the Major Commands, briefings were not extended to individual bases. The Deputy Special Assistant directed the development of a program to apprise installations of the new legislation (Robinson 1956a).

The Air Force was authorized to contract with architectural and engineering firms to design family housing under the provisions of Section 406 of the Housing Amendments of 1955, as amended. Consequently, the Air Force used the services of private-sector architectural and engineering firms to design the "most broadly competitive housing open to all methods of fabrication" (Robinson 1956b). The Air Force preferred local architectural and engineering firms for their familiarity with the local community and construction practices (Robinson 1956b). In addition, the Air Force coordinated closely with industry to design housing that could be adaptable to prefabrication (Robinson 1956b).

In February 1956, the Air Force planned to construct 51,226 family housing units at 84 Air Force bases under the Capehart Act (Anonymous 1956). By May 1956, the number of family housing units increased to 54,392 at 91 Air Force bases (Robinson 1956b). In a letter written to a prospective

Capehart sponsor, the Air Force referred the interested firm to several government documents on the development of military family housing. These documents included the FHA's *Rules and Regulations for Armed Services Mortgage Insurance* and a current list of Commands and bases where Capehart housing was under design (Anonymous 1956). This direction suggests that standardized designs were not developed for Air Force Capehart projects, but that precedent was considered in project development.

Congress increased the maximum allowable FHA-insured mortgage to $16,500 per unit in 1956. The Air Force noted that the justification presented to Congress for the unit cost increase did not include arguments for increasing the size or the number of single-family units. Congress increased the mortgage amount, in part, to allow for the construction of Capehart units in high-cost areas (McDonald 1956:1). The three services were instructed to develop implementing instructions for each service field office and to forward those instructions to the Assistant Secretary of Defense (Properties and Installations) (McDonald 1956:2).

The Air Force maximized the $16,500 mortgage limit by applying the Capehart Act solely to building construction; housing amenities were paid for through appropriated funds. For example, the Air Force used maintenance and operations funds to finance washers and dryers, which were classified as additive items in Capehart units. This policy eventually led to criticism from the Comptroller General of the United States, who was of the opinion that the $16,500 mortgage limit for Capehart units should include ranges, refrigerators, shades, and screens. The Comptroller General drew this interpretation from language contained in House Conference Report Number 2958, 84th Congress, 2nd Session. He concluded, "[A]ny and all equipment 'in, and used by the occupants of the [Capehart] dwellings' should be paid for solely with mortgage proceeds" (Robinson 1959a:2). The Air Force objected to this conclusion citing that all Air Force projects were within the statutory cost limit (Robinson 1959a:1). Deputy Special Assistant for Installations George S. Robinson felt the Comptroller General erred in his interpretation of the legislation's intent.

In a memorandum to the Assistant Secretary of Defense (Properties and Installations), Mr. Robinson contended, "a statute which on its face simply limits the extent to which a house can be mortgaged is being read as prohibiting the purchase of laundry equipment with money not borrowed from the mortgage" (Robinson 1959a:2). Mr. Robinson further noted that the Comptroller General had no objection to the Air Force use of maintenance and operations funds to procure furniture for Capehart units. For projects that did not include unit washers and dryers in the initial construction due to cost, the Air Force installed these appliances after the housing was turned over to the agency.

Air Force policy in 1959 demonstrated a preference for duplex units; single-family units were constructed for personnel holding the rank of Major or higher. One carport per dwelling unit was provided, and garages were an option in areas where winter temperatures dropped below 10 degrees Fahrenheit or in areas subject to salt air or high winds (Julius 1959:1). With the mortgage limit for Capehart housing raised to $16,500, the Air Force sought to raise the livability of Capehart units by incorporating washers and dryers as standard appliances (Robinson 1959a:3). Quarters constructed for Colonels and Generals were the only units constructed with dishwashers. These 1959 program policies were incorporated into the revised "General Design Criteria for Construction of Family Housing," issued on 10 December 1958 (Julius 1959:2).

By the early 1960s, the Air Force had developed regulations for the operation and management of family housing. Department of Defense Instruction 85-1, issued 12 August 1960, was encompassed in two Air Force regulations: AFR 85-5 "Civil Engineering – General, Operation and Maintenance of Installations Facilities," issued 10 June 1959, and AFR 93-3, "Civil Engineering – Control Procedures, Real Property Maintenance, Repair, Modification and Minor Construction

Projects," issued 5 March 1959. In addition to these regulations, the Air Force issued letters that addressed specific concerns, such as grounds maintenance. Family housing operation and management was integrated into the overall management of Air Force bases; a position was not created specifically to address the operation and management of family housing (Department of the Air Force n.d.:1,2).

The Air Force continued to authorize site-specific designs as opposed to standardized plans for Capehart projects. In October 1961 the Air Force authorized the procurement of architectural and engineering services to develop plans, drawings, and specifications for family housing (Imirie 1961:1). The Secretary of the Air Force approved housing projects. The Chief, Housing Division, Deputy Directorate for Civil Engineering Operations, Directorate of Civil Engineering issued an authorization for the procurement of the architectural and engineering services in a design directive (Imirie 1961:1).

The Air Force viewed rowhouses as undesirable. Under Secretary of the Air Force Charyk argued in a memorandum to the Secretary of Defense that construction costs for duplex units in high-cost areas were competitive with rowhouses. Rowhouse design was seen as lacking "pride of ownership" and contributing to lower morale for the airmen and junior officers (Charyk 1961:2).

4.3.3.1.1 AFB Master Plans

In contrast to the standards for earlier air bases, postwar planning criteria prohibited the construction of bases within 15 miles of the outskirts of large population centers, with a "lateral distance of at least 4 miles from the runway centerline extended" (Department of the Air Force 1959:28). The Air Force developed base master plans to justify military construction and real estate requirements to the Secretary of Defense, the Bureau of the Budget, and Congressional committees (Department of the Air Force 1959:32).

Installation Commanders ensured that military construction projects satisfied operational, terrain, and utility requirements. The Major Commands developed master plans. These plans became the basis and justification for the annual Military Construction Program, and provided guidance for siting authorized construction projects (Department of the Air Force 1959:33). The Major Commands prepared site plans and defined the functional requirements for military construction projects, which then were forwarded to the Air Force Installations Representatives (AFIR). The AFIR served as field representatives of the Director of Installations, Headquarters, United States Air Force and acted for the Chief of Staff, United States Air Force, on installation engineering matters (Department of the Air Force 1959:2).

The AFIR reviewed proposed projects for compliance with the master plan; provided information to the construction agency for the preparation of preliminary plans; and coordinated planning for the design of new construction between the Major Command and the construction agency (Department of the Air Force 1959:33). The AFIR also approved siting for minor projects and projects that did not use appropriated funds (Department of the Air Force 1959:33).

4.3.3.2 Navy Implementation of the Capehart Act

In a speech to the Commandants' Conference held on 3 December 1956, Admiral Meade opined that a billion dollars would not cover the cost of the Navy's housing and military construction programs (Meade 1956:1). In some Naval Districts, the "Capehart dollar volume" approached or exceeded the total military construction program funded by Congress (Meade 1956:2). The dollar volumes illustrate the size and scope of the Navy's Capehart program.

Appropriated funds were used for site acquisition and utilities (Anonymous 1959:3). The Navy favored the Capehart program construction over appropriated-funds construction for housing because the Capehart program limited the government's liability "by the amount of the residual value of the projects in the local economy" (Anonymous 1959:4).

The process utilized by the Navy in 1956 for identifying the need for a Capehart project and for selecting sponsors was lengthy and bureaucratic. The management bureaus of the Secretary of the Navy initiated projects. Naval Activities and Districts submitted their recommendations to the management bureaus for sponsorship. Site visits were made by members of the management bureaus and the Bureau of Yards and Docks to each Activity to confirm housing conditions. A representative from the Office of the Assistant Secretary of the Navy headed the assessment teams. Projects were approved by the Assistant Secretary of Defense (Properties and Installations) and the FHA after initial approval by the Navy and prior to submission to the Bureau of Yards and Docks for design and construction (Meade 1956:3). Site selection and acquisition accounted for a significant amount of time during the project development phase, since these issues had to be resolved prior to project design.

Two factors affected site selection. One was the location of the Naval Activity. Many of the older established Naval installations occupied urban sites with little room for expansion. Second, approximately 60 per cent of Naval Activities supported aviation efforts (Meade 1956:3). Noise associated with jet operations necessitated that many Capehart projects be located at a reasonable distance from the installation (Meade 1956:3). Both factors led to the acquisition of land for off-Activity housing developments. By late 1956, land was acquired for more than half of the 46 projects approved by the Secretary of the Navy (Meade 1956:4).

Off-Activity sites possessed inherent problems. Admiral Meade anticipated that Base Commanders would object to neighborhoods located far from Naval stations. He also acknowledged the potential for community opposition to unsegregated military housing (Meade 1956:4). The process of desegregating the military had begun under President Truman shortly following World War II. Desegregation of the armed services was complete by 1954 when the last African American unit was eliminated.

Once an Activity received preliminary approval from the Bureau of Yards and Docks, the District Public Works Officer (DPWO) immediately consulted with the installation Commanding Officer on project implementation. The DPWO selected and negotiated contracts with successful architectural and engineering firms in consultation with the FHA. A minimum of three architectural and engineering firms were interviewed for each project. Prior experience in designing housing meeting FHA standards and particular experience in designing "large tract housing" were important considerations in firm selection (Bureau of Yards and Docks 1956:2). To avoid political pressure or lobbying by the local construction industry, the Navy generally selected architects from outside the immediate area of the proposed Capehart project (Fitzgibbon 1957:1).

The DPWO worked closely with the architectural and engineering firm throughout the design process. Plans and specifications complied with the Bureau of Yards and Docks design criteria, technical publications, and special instructions issued by the Officer in Charge. This hands-on management was illustrated by the Great Lakes Capehart project. Records document that Captain Carberry, the Deputy DPWO at Great Lakes, had numerous conversations with the project architect regarding design (Carberry 1956).

The Navy sought to integrate as many amenities as possible in the Capehart projects. Such amenities, or "additive items," included clothes washers, vinyl and terrazzo flooring, master TV

antennas, garbage disposals, range hoods and fans, screened porches, and sidewalks (MacDonald 1960). The Navy furnished their housing units using appropriated funds.

Plans for Capehart projects underwent two phases of design review. Preliminary review ensured that the project met FHA requirements, while the final review secured military approval and the issuance of the Final Appraisal and Eligibility statement from the FHA (Bureau of Yards and Docks 1956: Enclosure 1:1). The housing was constructed in accordance with labor and prevailing wage standards. The Navy relied almost exclusively on the architectural and engineering firm to inspect its Capehart projects.

Admiral Meade acknowledged that developing standardized plans and limiting the number of house types was desirable to expedite projects. As a result, exterior design of the dwellings reflected local and regional architectural influences, while interiors were more standardized.

By late 1956, the Secretary of the Navy approved 46 projects totaling 25,300 quarters. The Navy still faced a housing shortage during the late 1950s despite strides made under the Wherry and Capehart programs. In 1959, there were 388,821 families living in inadequate quarters, which were defined as inadequate due to space and amenity deficiencies or because of excessive rental rates (Anonymous 1959:5).

Navy policy maximized living space to the degree possible within budgetary restrictions. The Bureau of Yards and Docks opposed multi-unit buildings of six to eight units. This opposition was illustrated by the Capehart project at Great Lakes. The Bureau approved the project density only after the DPWO, in consultation with the Commander at Great Lakes, determined that the design was acceptable and the most effective way to meet the family housing need within cost limitations (Chief, Bureau of Yards and Docks 1956:1).

The Navy discussed whether Capehart units were ill-suited for flag officers due to the cost limitations imposed under the Capehart legislation. The lack of basements, garages, storage and guest rooms, combined with consolidated kitchen and dining areas, were reasons cited for rejecting Capehart housing for senior ranking staff at NAS Whidbey Island (Towner 1961). Other Activities, however, such as Port Hueneme, California, housed flag officers in Capehart housing.

As late as 1959, problems arose in Hawaii over administrative procedures implementing the program (Ray 1959:2). The lack of clear administrative procedures for construction and project acceptance was particularly acute, because Capehart projects in Hawaii represented 42 per cent of the Navy's Capehart program in 1959 (Ray 1959:3). Rear Admiral Peltier, Chief of the Bureau of Yards and Docks, recommended the creation of a reporting process to address the administrative issues. The Bureau was uninvolved once the project proceeded to the construction phase. New reporting procedures required greater interaction between the Naval Districts and the Bureau (Peltier 1960:2). Rear Admiral Peltier also changed the inspection policy. Rear Admiral Peltier directed the Navy to inspect all construction rather than delegating that responsibility solely to architectural and engineering firms. In cases where the Naval Districts were unable to undertake construction inspections, the Bureau decided whether to assign Naval personnel for the task or to employ an architectural and engineering firm (Peltier 1960:3).

The General Accounting Office criticized the Navy for spending funds on preliminary plans for projects that never went forward. The Navy approached planning for Capehart projects in the same manner as construction using appropriated funds. Developing preliminary plans was the Navy's method of insuring that the Navy would be able to assure Congress of a project's economic feasibility, particularly in high-cost areas (White 1958:1, 2). The development of preliminary plans allowed the

Navy to proceed quickly once a Capehart project was approved. The Navy was unable to produce preliminary plans in-house due to other staffing commitments and contracted with architectural and engineering firms to complete this task (White 1958:2).

By 1961, the Navy had created a comprehensive family housing program with well-developed expertise in programming, construction, and management. In a 1961 draft report, an advisory panel appointed to appraise the Navy's family housing program recommended that the Air Force and Army emulate the Navy's program (Connally 1961:1). The advisory panel also advocated for Navy construction of row housing. The Navy strongly opposed this recommendation based on experiences with rowhouses constructed under the Wherry program. Secretary of the Navy John Connally contended that row housing reduced morale. Secretary Connally noted in a memorandum to Secretary of Defense McNamara, that "we are in the housing business mainly for the express purpose of improving morale and retaining personnel" (Connally 1961:2).

4.3.3.2.1 The Use of Standardized Plans

The Navy did not develop nationwide standardized plans for Capehart housing, although Naval Districts and Commands occasionally adopted a standardized approach to housing in a specific area. Site-specific design contrasted with the standardized approach adopted by the Army through its *Folio of Accepted Designs* for Capehart and appropriated-funds housing.

The District Public Works Officer for the Sixth Naval District had advocated for the use of standardized plans as early as 1956. The DPWO expressed frustration over design development for a Capehart project at the Marine Corps Supply Center, Albany, Georgia. Marine Corps and Navy architects made several changes to the plans previously approved by the DPWO, which the DPWO viewed as an attempt to duplicate the design developed for a project under construction at New River, North Carolina, rather than an effort to add value to the Albany project (Corradi 1956:1). DPWO suggested the development of standardized plans, which would relieve "future Capehart A/Es of the basic design study for the dwelling units" (Corradi 1956:2).

In a memorandum to the Ninth Naval District DPWO, Mr. E.H. Eaton, Manager of the Capehart Development Branch within the Housing Division of the Bureau of Yards and Docks reported on the progress of the Capehart project at New River. In his memorandum, Mr. Eaton stated that everyone "is quite pleased with the design that we obtained for this project. It was not, of course, the plan originally developed by the architectural and engineering firm, but rather a composite design incorporating revisions from the Naval District, the Bureau and the Marine Corps" (Eaton 1956). The Albany and New River projects illustrated the decentralized administration of design and construction in the Capehart program. Archival research suggests that some Naval Districts, such as the Fourteenth Naval District for Naval activities in Hawaii, developed standardized plans for Capehart housing within their jurisdiction. The DPWO responsible for Hawaii retained an architectural and engineering firm to prepare one design for use at eight Navy and Marine Corps installations in the territory to expedite Navy and FHA approval (Korink 1956a:2).

By 1960, Rear Admiral Peltier advocated standardized floor plans for future Capehart projects. These standardized floor plans, which he called a "family of plans," were in design at the Bureau (Peliter 1960:2). Interior plan selection from the family of plans became Navy policy, and deviations were not approved without prior Bureau authorization. The architectural and engineering firms continued to integrate dominant regional architectural influences in exterior designs. While the Bureau did not anticipate achieving significant construction savings by mandating standardized floor plans, the Navy hoped to realize labor economies because "Commanding Officers and their representatives will not have much latitude in Capehart design." Approvals by the Bureau were limited

to site layout, and architectural and engineering firms proceeded quickly to final plans and specifications (Peltier 1960:2).

4.3.3.3 Summary Comparison of Capehart Implementation among the Services

Planning and implementation of Capehart housing projects remained at the local level. Air Force Base Commanders and the Navy's DPWOs were involved in the decision-making process. The Air Force developed standardized implementation policies late in the Capehart program while the Navy standardized its Capehart procedures in 1956 after the Capehart legislation was signed into law.

Each service developed implementation procedures to suit its particular needs and administrative structure. For example, Air Force Capehart housing projects were required to comply with the base master plan. The Navy developed a more complex system for administering and implementing the Capehart program than the Air Force. Capehart projects were initiated in the offices of the Secretary of the Navy, with Naval Activities and Districts submitting their recommendations for project sponsorship to the Secretary of the Navy's management bureaus. Upon receiving preliminary approval for a project, the DPWO consulted with the installation Commanding Officer.

Air Force Capehart policy attempted to maximize limited funding. Capehart mortgage funds were used solely for the construction of the buildings. The Air Force paid for amenities, such as washers and dryers, using appropriated funds. Air Force policy to provide amenities through appropriated funds drew criticism from the Comptroller General of the United States. The Navy incorporated the cost of amenities into the project's overall construction costs; appropriated funds were used to furnish the units. Air Force policy demonstrated a preference for duplex units over single-family and multi-family units. The Navy also opposed the construction of multi-family buildings having six to eight units.

Both services developed site-specific plans for the design of Capehart neighborhoods. The Air Force authorized site-specific designs rather than relying on previously developed standardized designs. The use of site-specific drawings suggests that base officials continued to play an important role in the development of Capehart housing. The Navy focused its limited resources on developing preliminary plans rather than developing standardized drawings. The use of preliminary plans enabled the Navy to adequately asses a project's economic feasibility as well as to quickly proceed with a Capehart project after it was approved by the appropriate channels. The Navy did not advocate the development of standardized plans for Capehart housing until 1960.

4.3.4 Public Law 1020

Public Law 1020, enacted in August 1956, stimulated interest in the Capehart program. The law extended the Capehart Act until 30 September 1959. The legislation also increased the maximum unit size and raised the average cost per unit to $16,500 following recommendations developed in Congressional committee hearings. The legislation also addressed challenges to projects in high-cost areas. The 1956 legislation made construction under the Capehart program competitive with military construction financed through appropriated funds. Up to that time, houses constructed with appropriated funds generally were larger and built with better materials than the Capehart units due to the limitations imposed by the Capehart Act (U.S. Senate 1957:6). For appropriated-funds housing, Public Laws 626 and 653, 80th Congress, mandated the maximum size of living units based on rank: 2,100 square feet for generals; 1,400 for majors and lieutenant colonels; 1,250 for warrant officers, flight officers, and commissioned officers below the rank of captain; and 1,080 for enlisted personnel.

The original Capehart ceiling of $13,500 per unit was inadequate to build units of these sizes (USAEC 2003:4-18).

The use of prefabricated materials and components was authorized under the original Capehart legislation; however, few Capehart projects took advantage of the benefits prefabrication afforded (USAEC 2003:4-18). Congress attempted to attract interest in modular measure by the construction industry through legislation. Public Law 1020 mandated the standardization of building materials and construction technology in all new Capehart projects. The legislation directed that "plans, drawings and specifications developed for Title VIII military housing must follow the principle of modular measure so that the housing may be built by conventional construction, on-site fabrication, factory precutting, factory fabrication, or an combination of these construction methods" (U.S. Public Law 1020 1956). Subsequent design criteria developed by the Department of Defense also mandated the use of modular measure (Morris 1961:11).

4.3.5 Acquisition of Wherry Housing

During Congressional hearings prior to the Capehart Act, Wherry Act sponsors voiced concern over the ability of Wherry housing to compete with larger and better-quality Capehart housing. The government sought to address this concern. Language was inserted in the original Capehart legislation authorizing the military services to purchase Wherry housing. Public Law 968 also authorized the military acquisition of Wherry housing. The difference between the two pieces of legislation was price. Under the Capehart Act, the Secretary of Defense could acquire Wherry housing for the "fair market value of such land or housing as determined by the Secretary on the basis of an independent appraisal" (U.S. Public Law 345 1955:652). Public Law 968 directed that the purchase price of Wherry housing not exceed the FHA commissioner's estimate of the replacement cost of the housing less depreciation (U.S. Public Law 968 1956:1198). The change in the value of the acquisition price for Wherry housing was significant for two reasons. The fair market value of the housing could be significantly more than the replacement price minus depreciation. The new calculation enabled the government to acquire Wherry housing at lower cost (USAEC 2003:4-19).

Public Law 1020 also created a revolving fund to purchase Wherry housing and required military acquisition of Wherry housing at installations proposing Capehart projects. Capehart projects could not be constructed until the military service acquired existing Wherry housing at that installation (USAEC 2003:4-19).

Wherry units were smaller, had fewer amenities, and did not meet then current military family housing standards. Congress appropriated $70 million to bring Wherry housing up to Capehart standards. Improvements included combining units to create larger quarters and adding baths, storage, and bedrooms (USAEC 2003:4-20).

The Navy plans for renovation included modernizing and enlarging kitchens, combining one-bedroom units to create two bedroom units, enlarging master bedrooms, adding covered porches, and additional clothes storage (*Navy Times* 1958). It was expected that the Navy plan would be adopted by the Air Force and the Army (*Navy Times* 1958).

The Navy reconfigured the Wherry housing units at the Wake Village project at Parris Island. The original sixteen one-bedroom units were redesigned to create eight three-bedroom units. Dining areas were enlarged in many of the units. Enclosed porches with storage, awning windows, and washer hook-ups were provided for all units; lighting and electrical services were upgraded ("Parris Island Wherry Housing ["Wake Village"]" n.d.). Additional work included replacing heating systems,

installing soundproofing, installing air conditioning, and constructing utility rooms, additional bedrooms and half baths ("Parris Island Wherry Housing ["Wake Village"] n.d.).

4.3.6 The Construction of Non-Residential Buildings under the Capehart Act

Both the Navy and the Air Force sought to construct non-residential buildings in Capehart neighborhoods using FHA mortgage-guaranteed funds. Congress felt the use of such funds was beyond the original intent of the Capehart legislation.

The Navy proposed the construction of a general-purpose building in conjunction with the Capehart project at NAS Whidbey Island. The Capehart neighborhood was located off-station and the Navy maintained that a general purpose building for project administrative and material storage was imperative to the timely completion of the project within budget (Chief of Naval Air Basic Training 1960). The Air Force planned Youth Centers at a number of installations as part of the Capehart projects. Such centers previously were not included in Capehart housing requests to Congress. The Air Force sought approval for the youth centers from the Appropriations Committee (Garlock 1959).

Congress strenuously objected to using Capehart mortgage proceeds for the construction of non-residential buildings. Carports, garages, and storage buildings constructed to support housing were excluded from this provision. In a letter to the Comptroller of the Department of Defense, the Chairman of the Housing Sub-Committee on Military Construction stated:

> None of these facilities were presented to the Appropriations Committee in connection with the housing program for Fiscal Year 1960. By no stretch of even the imagination of the Legal Department can they be regarded as having been approved by this committee. For a service in the Department of Defense to proceed with the construction of non-dwelling facilities at this time would certainly be a breach of faith this committee. You are, accordingly, directed to see that this is not done and that the construction of Capehart Housing projects be limited to the dwelling facilities as presented to the committee (Logan 1960).

In light of Congress' position, the Deputy Comptroller for Budget in the Office of the Secretary of Defense instructed the three services to refrain from building non-residential support buildings as part of Capehart projects (Logan 1960).

4.3.7 1961 Department of Defense Military Family Housing Policy

In May 1961, the Department of Defense issued a new military family housing policy and criteria. Under the policy, family housing needs were based on projected personnel levels and the lowest sustained strength (Department of Defense Housing Commission 1961:1). Military family housing was extended to career military officers comprising married, male commissioned and warrant officers, and to some enlisted personnel. The number of married personnel was determined by "actual marital rate experience for each installation" (Department of Defense Housing Commission 1961:1). Women and enlisted men in grades E-1 through E-3 and E-4 with less than seven years of service were excluded from the calculations for family housing (Department of Defense Housing Commission 1961:1). All adequate family housing – which comprised Capehart, Wherry, and appropriated-funds housing on-base, and adequate private housing off-base – could not exceed 90 per cent of an installation's housing requirements (Department of Defense Housing Commission 1961:3).

4.3.8 Advisory Panel on Military Family Housing Policy

In 1961, an Advisory Panel on Military Family Housing Policy named by Secretary of Defense McNamara issued recommendations for addressing the family housing problem. The panel endorsed the creation of a professional Family Housing Management Office in the Office of the Secretary of Defense. The establishment of a uniform military family housing management organization in the Air Force, Navy, and Army also was promoted. The panel recommended increasing the Basic Allowance for Quarters Schedule by an average of 18.5 per cent (Gilpatric et. al 1961:2).

In late 1961 and early 1962, the Air Force took the recommendations of the Advisory Panel under consideration and established a centralized family housing office at the Air Staff, Major Command, and base levels. Each family housing office was staffed by housing professionals. The housing office reported directly to the Head Civil Engineer at each level. In a memorandum to the chief of staff, Deputy Special Assistant for Installations George Robinson noted that the Navy was well on the way towards centralizing its housing operations, and he suggested that the Air Force examine the Navy's organization and operations (Robinson 1961a:1).

4.3.9 Capehart Slowdown

The Capehart Act attracted critics, and local communities were concerned about overbuilding. Yielding to public pressure, the Department of Defense suspended the Capehart program in 1957 pending a review. Congress limited the number of Capehart units constructed per year by each service as a result of the program review.

Public Law 86-149 capped the number of Capehart units that could be constructed between 30 June 1959 and 30 September 1960 at 20,000. Proposals for a total maximum of 10,000 units could be advertised at any one time (Bryant 1959d). The legislation directed that the Secretary of Defense determine the distribution of the units among the services (Millberry 1959). The Air Force was authorized to construct 8,800 units and the Navy received authority to construct 4,360 units (Bryant 1959b:1). Each military service certified that the number of units was "consistent with long-range military strengths and deployment based on the latest military planning" and conformed "with current programming criteria" (Bryant 1959b:2). This certification occurred twice. Capehart projects were certified with requests for appropriated funds for site acquisition and/or off-site utilities. The projects again were certified before advertisements were placed for construction bids.

Congress reviewed national housing policy and the Title VIII program in 1961. Critics of Title VIII and Congressional leaders began questioning the economic advantages of private sector construction of military family housing. It had become apparent that construction was more cost effective using appropriated funds. The Comptroller General issued a series of reports that were critical of the Title VIII program. Congress re-evaluated the Capehart program and made the determination that Title VIII had outlived its usefulness. Consequently, Congress did not authorize any new Capehart projects and the legislation was allowed to expire in October 1962 (USAEC 2003:4-21).

4.3.10 Results of the Wherry and Capehart Programs

The Wherry and Capehart programs significantly reduced the military family housing shortage. The Air Force built the largest number of Capehart units, exceeding the total number constructed by the Navy and the Army combined (Robinson 1961b:1). Table 8 compares the two construction programs across the three services.

Table 8. Wherry and Capeheart Housing Inventory, 1960

	Navy	Air Force	Army	Total
Capehart Units	19,806	59,142	36,351	115,299
Wherry Units	24,366	36,812	22,249	83,727

Numbers include subsequent year authorization and units approved by Congress but for which construction has not started.
Source: Office of Secretary of Defense, Statistical Services Center, 31 October 1960.

4.4 THIRD-PARTY REVIEWS OF CAPEHART HOUSING

The results of the Capehart Act were reviewed by government and the private sector throughout the program. The architectural firm of Keyes, Lethbridge & Condon was retained by the Department of Defense to review Air Force, Navy, and Army Capehart housing. In general, the firm's review was favorable, and often cited projects where Capehart housing exceeded the quality of comparable private-sector housing. Criticisms focused on the construction materials and building techniques applied in some projects. The Comptroller General also reviewed the implementation of the Capehart program by the three services. The reports, which were presented to Congress, identified areas of financial waste and perceived abuse.

4.4.1 The Keyes, Lethbridge & Condon Review of Capehart Housing

The Washington, D.C. architectural firm Keyes, Lethbridge & Condon conducted a survey of Capehart housing for the Department of Defense. The results were presented in the report *Inspection, Study & Analysis Capehart Housing Projects*, submitted in April 1959. The firm reviewed selected Capehart projects constructed by the three branches of the military. This review included five Army projects, eight Air Force projects, and three Navy projects. The goal of the review was to develop recommendations for future planning, design, and construction of Capehart housing. The report covered topics ranging from building materials, site planning, building design, and amenities.

The firm focused its investigation on NCO three-bedroom units, which comprised the majority of Capehart housing (Keyes, Lethbridge & Condon 1959:1). The study concluded that the houses constructed under the Capehart program "were equal to, or superior to, comparable commercial housing in the same general category and cost range," with a few exceptions (Keyes, Lethbridge & Condon 1959:2). Housing constructed at Lincoln AFB, Nebraska; Homestead AFB, Florida; and Myrtle Beach AFB, South Carolina were identified as among the highest quality reviewed for the study. The housing units added at Mather AFB, California, and MCAS, Cherry Point, North Carolina, were nearly equal in quality. All of these examples were planned and constructed to higher standards than similar housing in the civilian market (Keyes, Lethbridge & Condon 1959:8). The report concluded that while the overall Capehart product was good, there was room for improvement. The report cautioned that improvements would not be made by accepting contemporary, private-sector construction standards (Keyes, Lethbridge & Condon 1952:2).

In contrast to the Army, both the Navy and the Air Force developed Family Housing Offices staffed by trained housing professionals. The Keyes, Lethbridge & Condon report endorsed the adoption of standardized DoD criteria derived from the Air Force's *General Design Criteria for*

Construction of Family Housing (10 December 1958)[1]. These proposed new standards would not duplicate the FHA's *Minimum Property Standards* or the HHFA's *Design Standards for Construction of Permanent Family Housing for Federal Personnel*. While the report advocated for standardized housing criteria, it strongly opposed standardized plans and was critical of the Army Corps of Engineers' *Folio of Accepted Designs*. The authors of the report cautioned that standardized plans stifled the development of plans for specific projects "to something very little better than what has already been constructed" (Keyes, Lethbridge & Condon 1959:5). Justifying objections to strictly mandated standardized plans, the authors expressed concern that the construction of architecturally substandard plans could be repeated at different installations (Keyes, Lethebridge & Condon 1959:5). The authors concluded that the use of standardized plans for hangars, warehouses, and other non-housing buildings was appropriate but were not appropriate for the design and construction of family housing (Keyes, Lethebridge & Condon 1959:6).

The Keyes, Lethbridge & Condon report recognized the challenge of constructing family housing within the cost limitations of the Capehart program. Construction costs varied from region to region, and the report suggested adopting a system of variable mortgage ceiling dependent upon regional construction costs.

The report recommended against the construction of walk-up or high-rise apartment buildings unless warranted by unusual conditions. The Air Force and Navy were criticized for failing to construct more rowhouses. The building type provided an efficient and cost-effective alternative if designed to above minimum standards and with private yards and community facilities (Keyes, Lethbridge & Condon 1952:4).

Architectural standards were comparable among the sixteen installations surveyed, with minor regional variations in materials (such as wood shakes in New England and stucco in California) and construction techniques (additional reinforcement for units constructed in earthquake and hurricane zones). The full range of window types then available was used in the construction of Capehart units. Kitchen cabinets were considered to be good or better than average quality. Washing machines were considered desirable but not required. Washing machines were included in project specifications for Air Force projects or were provided by the Air Force through alternative funding. Such appliances were sometimes specified in Navy projects, but not standardized through alternative government funds. Washers were incorporated in Army projects (Keyes, Lethbridge & Condon 1959:14). The same variation was noted regarding clothes dryers, with the exception that the Navy never specified dryers as basic equipment (Keyes, Lethbridge & Condon 1959:14). Dishwashers were considered non-essential and were not included by any of the services (Keyes, Lethbridge & Condon 1959:15).

Only selected Capehart projects included air conditioning. The growing acceptance of air conditioning as standard in the civilian market led the report authors to recommend that projects that did not include air conditioning in the initial construction include design provisions for future modification. Two and a half baths were considered adequate for three-bedroom units; the report strongly discouraged decreasing the minimum standard to two bathrooms in three-bedroom units (Keyes, Lethbridge & Condon 1959:14).

Noting that each service employed its own policies for construction inspections, the report argued in favor of consistently delegating construction oversight to architectural and engineering firms. The Air Force retained the architect who had designed the project for site inspections. The Navy usually employed Navy personnel to conduct site inspections; however, project architectural and engineering firms were occasionally used. The Army relied upon the Army Corps of Engineers.

[1] Attempts to locate this source were unsuccessful.

While architectural and engineering firms were recommended to conduct site inspections, the report strongly encouraged the military to inspect the projects prior to government turnover.

The report further recommended that the military service maintain common project areas, while private spaces should be maintained by the tenants "so that they might experience all of the advantages of home ownership" (Keyes, Lethbridge & Condon 1959:28). The report discouraged the construction of fences by tenants, labeling the resulting variation of design "unsightly." Fencing should be designed by architectural and engineering firms, restricted to certain areas, and installed by the installation.

4.4.2 The Comptroller General's Review of Capehart Housing

The Comptroller General presented the results of a comprehensive review of the Capehart program to Congress in July 1960. In his report, the Comptroller General criticized the Air Force and the Navy for using appropriated funds for the purchase of residential appliances, such as washers, dryers, and dishwashers (Comptroller General of the United States 1960:92). The Air Force was cited for this continuing practice despite instructions from the Assistant Secretary of Defense (Comptroller General of the United States 1960:92).

In contrast to the procedures followed by the Navy and the Army, the Air Force also used appropriated funds to finance construction inspections for Capehart projects. The Comptroller General found that inspection expenses above and beyond those completed by the architectural and engineering firm should be included under the Capehart mortgage; appropriated funds should not be used to pay for project inspection (Comptroller General of the United States 1960:92). The Air Force also was criticized for the construction of officer housing (major and above) that exceeded mortgage limitations.

The Comptroller General undertook a review of Capehart projects at Myrtle Beach AFB, South Carolina, and Chanute AFB, Illinois. The results were presented in *Unnecessary Costs Incurred because of Administrative Negligence and Poor Design in the Construction of Two Capehart Housing Projects*. The report, submitted to Congress in October 1963, criticized the Air Force for approving the wrong paint for exterior siding in the Myrtle Beach AFB project and for poor storm drainage at the project at Chanute AFB.

5.0 HOUSING CONSTRUCTED UNDER MILITARY CONSTRUCTION, AIR FORCE AND MILITARY CONSTRUCTION, NAVY

5.1 SUMMARY

Congress supplemented the stock of military family housing constructed under the Wherry and Capehart programs with additional units funded through appropriating funds under military construction, Air Force and military construction, Navy line items of the Department of Defense appropriation bills. In contrast to the housing designed and constructed by the private sector under the Wherry and Capehart programs, the military agencies were responsible for the construction of appropriated-fund housing. The Army Corps of Engineers initially oversaw construction of Air Force housing in coordination with the Air Force, while the Navy Bureau of Yards and Docks undertook construction oversight for Navy housing. Housing constructed using appropriated funds met military housing needs in situations where construction costs exceeded the limits established under the Wherry and Capehart programs, or where the numbers of housing units needed were too small to attract private-sector sponsors (U.S. Senate 1957:5). Congress appropriated substantial funds for military family housing in 1954 during the transition between the Wherry and Capehart programs. After 1962, Congress and the military services exclusively funded the construction of family housing through appropriated funds after determining that construction utilizing this funding method was more cost-effective than the private-sector programs. Table 9 summarizes appropriated-funds housing constructed by service.

Table 9. Appropriated-Funds Housing Constructed between 1949 and 1962

Service	Total (in untis)
Air Force	5,140
Navy	916
Marines	551
TOTAL	**6,607**

Note: See Appendix D for breakdowns by installation
Source: See page D-1

5.2 MILITARY CONSTRUCTION, AIR FORCE AND MILITARY CONSTRUCTION, NAVY

5.2.1 1949-1962 Appropriations

While Congress was developing the provisions of the Wherry program during the summer of 1949, it also examined the military's family housing needs for fiscal year 1950. The Air Force submitted a request for 3,550 family housing units, which included 2,694 units in the United States and 856 units outside the United States, including Alaska (U.S. House of Representatives 1949b:3282). The Navy requested 1,317 units of family housing, comprising 861 units within the United States and 456 outside the United States, including Alaska.

Most of the requested housing was intended to relieve shortages in isolated areas where private-sector housing was not available (U.S. House of Representatives 1949b:3179, 3282). Neither service received funds for family housing requested for installations within the continental United States for fiscal year 1950. Construction of family housing was authorized for installations located outside the continental United States, including Navy facilities at Adak and Kodiak, Alaska, and Eielson AFB, Alaska (U.S. Public Law 420 1949:958). These funds were included in the National Military Establishment Appropriation Act for fiscal year 1950 and specified housing construction cost ceilings by rank, including $14,040 for generals, $12,040 for majors, lieutenant colonels, and colonels, $11,040 for second lieutenants, lieutenants, captains, and warrant officers, and $10,040 for enlisted personnel (no Navy-specific ranks were listed) (U.S. Public Law 434 1949:1029).

No appropriations for military family housing within the continental United States were requested for fiscal year 1951, because officials believed the Wherry program would address the

housing shortage (U.S. House of Representatives 1950:157). Housing authorizations for Navy or Air Force family housing for that year were limited to an unspecified number of housing units at Ladd AFB, Alaska. A section of the authorization stated, "Nothing contained in this Act shall be construed to authorize the construction of family quarters or the conversion of existing structures to family quarters at any of the localities mentioned under Titles I, II, and III [the Army, Navy, and Air Force sections] of this Act under the heading 'Continental United States' (Public Law 564 1950:242-247).

Between 1951 and 1954, 800 military family housing units were built in the United States using appropriated funds. This total likely includes the unspecified number of family housing units authorized by Congress at 57 Air Force bases in fiscal year 1952. (U.S. House of Representatives 1954:5323; U.S. Public Law 155 1951:496-506; U.S. Public Law 254 1951:773). The Navy, Marine Corps, Air Force, and Army anticipated that the Wherry program would fulfill military family housing needs (U.S. House of Representatives 1954:5336). Appropriations acts continued to establish cost ceilings for family housing. The appropriation for fiscal year 1952 reiterated the cost ceilings for fiscal year 1950 (U.S. Public Law 179 1951:583).

By 1954, it became clear that construction under the Wherry program was not proceeding quickly enough to meet the entire family housing shortage. The Navy and Marine Corps estimated that they lacked a total of 63,000 units, and the Air Force estimated a shortage of 161,000 units (U.S. House of Representatives 1954:5324).

Wherry program housing was anticipated to cost more than appropriated-fund housing over the long term. During testimony before the House Committee on Real Estate and Military Construction in 1954, Franklin G. Floete, Assistant Secretary of Defense for Properties and Installations, noted that quarters allowances of $90 per month paid to Wherry sponsors during the 50-year contract, with interest, totaled $95,310. In contrast, appropriated-fund housing cost the United States a one-time investment of approximately $13,500 per unit. Floete further calculated that the government would spend less on maintenance, utilities, and interest for appropriated-fund housing during the 50-year period than on Wherry quarters allowances (U.S. Senate 1954:19-20).

That year, the military presented Congress with a request for $350 million in appropriated funds to more quickly meet the family housing need (U.S. House of Representatives 1954:5394-5). Department of Defense priorities for appropriated-fund housing for fiscal year 1955 included construction at isolated installations with special missions, such as Air Force aircraft control and warning, and fighter interceptor installations; installations without permanent status, such as Air Force Strategic Air Command bases; Navy, Air Force, and Army installations where Wherry program housing was difficult to acquire or not feasible to build; and, installations with family housing converted from temporary buildings (U.S. House of Representatives 1954:5325). These priorities totaled 25,000 family housing units (U.S. House of Representatives 1954:5426).

During Congressional testimony, military officials stressed that the housing request was intended to supplement Wherry housing, not to replace housing constructed under the program (U.S. House of Representatives 1954:5402). In addition, the request for appropriated funds for fiscal year 1955 was the first in a six-year program designed to gradually close the military family housing gap; the military intended to seek a total of $2 billion to build 150,000 units over the six years (U.S. House of Representatives 1954:5404). It was apparent from their testimony that military officials sought to reassure lawmakers, concerned over deficit spending and government involvement in house construction, that the private-sector partnership remained the focus of the military family housing program.

Under the Department of Defense's general plan for allocating appropriated funds, multi-family dwellings, costing an average $13,500 per unit, were proposed for enlisted personnel and company-grade officers. The size of units were set at 950 square feet for enlisted personnel, and 1,125 square feet for company-grade officers (U.S. House of Representatives 1954:5330).

After considering the Department of Defense's $350 million housing request, the House and Senate Armed Services Committees drafted a bill that authorized up to $175 million for the construction of 13,613 housing units across all service branches (U.S. Senate 1954:6, 11). The legislation proposed 1,525 family housing units for the Navy in the continental United States, Alaska, and Hawaii, including 466 units for Marine Corps facilities (U.S. Senate 1954:2-4, 56). For the Air Force, the legislation proposed 6,499 family housing units (U.S. Senate 1954:4-6). The remaining units were allotted to the Army.

The legislation proposed net floor areas of 2,100 square feet for up to 250 units for all the service branches; the average net floor area of the other units could not exceed 1,080 square feet (U.S. Senate 1954:6). Multi-family dwellings were proposed for enlisted personnel and company-grade officers, duplexes for field-grade officers, and single-family houses for commanding officers and generals (no Navy-specific ranks were indicated). The average cost of the units proposed in the legislation was $14,500 (U.S. Senate 1954:11).

Congress authorized the majority of the military family-housing request. For the Navy and Marine Corps, a total of 1,419 units were authorized for the continental United States, Alaska, and Hawaii. This figure represented a reduction of 106 units from the original request. For the Air Force, 6,429 family housing units were authorized, a reduction of 70 units from the initial request. Congress also preserved the floor area limits (U.S. Public Law 765 1954:1325-1330). However, the Air Force built only 3,885 of the authorized units. One project was canceled before construction, and the number of units planned for 13 other locations was either reduced or eliminated because Wherry housing was planned for those locations (U.S. House of Representatives 1955b:75-76). In addition, funding appropriations were made for only 40 per cent of the family housing units authorized for the entire military (U.S. Senate 1957:4).

The Department of Defense's family housing request for fiscal year 1956 indicated that it no longer believed that military family housing constructed by the private sector was the primary way to meet military housing needs. Department of Defense officials told Congress that they supported proposed changes to the Wherry law to strengthen the housing program, but viewed Wherry Act housing as supplement to appropriated-funds housing (U.S. House of Representatives 1955a:5). This view represented a dramatic reversal in the solution originally structured to build the majority of family housing under the Wherry Act, and to supplement the Wherry program through the construction of additional housing units using appropriated funds.

For fiscal year 1956, the Navy and Air Force increased their family housing requests. During Congressional testimony, Department of Defense officials estimated a shortage of approximately 180,000 family housing units in the continental United States, including 37,000 for the Navy and 90,000 for the Air Force (U.S. House of Representatives 1955a:3-4). The Navy requested 3,088 units, an unspecified percentage of which were likely intended for construction overseas (U.S. House of Representatives 1955a:6). Family housing was authorized for 14 Navy and Marine Corps installations in the continental United States, Alaska, and Hawaii (U.S. Public Law 161 1955:360-366). The Air Force requested the addition of 8,058 units in the continental United States, as well as funding for 4,107 units authorized but not funded in fiscal year 1955 (U.S. House of Representatives 1955b:20) Family housing was authorized for 40 Air Force bases (U.S. Public Law 161 1955:368-379). The

fiscal year 1956 appropriation funded that year's authorization as well as the unfunded balance of the previous year's authorization for both services (U.S. Senate 1957:4).

In 1957, an emphasis on private-sector housing construction began to return. In January, some Navy and Air Force housing units authorized for fiscal years 1956 and 1957 were cancelled or deferred, in order to determine whether those housing needs could be met under the Capehart program. For fiscal year 1956, 358 Navy units and 6,816 Air Force units were deferred or canceled. For fiscal year 1957, 145 Air Force units and three Navy units were deferred or canceled (U.S. House Subcommittee of the Committee on Appropriations 1957:113-119). Nevertheless, between fiscal year 1955 and the middle of fiscal year 1957, the Navy constructed or issued contracts for the construction of 1,113 houses with appropriated funds; the Air Force built 4,421 houses with appropriated funds (U.S. House of Representatives 1957:115, 119).

In fiscal year 1957, the Air Force requested funding for the construction of 1,261 family housing units on ten installations in the continental United States and Alaska. An additional 800 units were requested for 74 unspecified air control and warning sites (U.S. House of Representatives 1956:23). Though the Air Force requested housing for ten bases, it received authorization to build at nine installations. No family housing funds were authorized for the Navy in 1957 (U.S. Public Law 968 1956:1177-1191).

The Army Corps of Engineers was assigned construction oversight for 434 housing units at Air Force aircraft warning and control sites. Due to excessive cost overruns, these projects were suspended, and later were completed by the Air Force (Douglas 1956:1). Under Secretary of the Air Force James W. Douglas recommended that the Air Force construct the 1,213 units planned for fiscal year 1957. He suggested that the Air Defense Command supervise the projects as it had done in the construction of the 434 housing units, which recently were completed. Douglas was concerned that the costs for design, inspection, overhead, and contingency charged to the Air Force by the Army Corps of Engineers would require a reduction of the overall number of units or in a reduction in the size of the units in order to execute the project within budget (Douglas 1956:2).

As was the case during the Wherry program, military family housing constructed through appropriated funds continued merely to supplement the number of housing units constructed under the Capehart program. For fiscal year 1958, the Navy received authorization to build appropriated-funds family housing at only Adak, Alaska. The Air Force was authorized to construct an unspecified number of family housing units at four bases, as well as family housing at various unspecified installations that comprised the aircraft control and warning system (U.S. Public Law 85-241 1957:583-99). For fiscal year 1959, the Navy requested funding for 81 family housing units at Naval Station Adak, Alaska; the Air Force requested 54 units at various domestic locations (U.S. House of Representatives 1958:11). The public law authorizing military construction for fiscal year 1959 authorized housing construction only at unspecified Air Force aircraft control and warning stations; no housing was authorized for the Navy (U.S. Public Law 85-685 1958:751-771).

The Military Construction Authorization Acts for 1958 and 1959 included a provision requiring that construction contracts within the United States fall under the jurisdiction and supervision of the Army Corps of Engineers for the Department of the Air Force and the Bureau of Yards and Docks for the Department of the Navy. The Assistant Secretary of Defense (Properties and Installations) determined that the Air Force had developed program management expertise and therefore should retain authority over the construction of its Capehart units (Robinson 1959b:1). The Air Force again voiced its concerns over using the Army Corps of Engineers for constructing appropriated-funds housing for the Air Force. Citing problems with projects at Lincoln and Glasgow,

Air Force Deputy Special Assistant for Installations George Robinson advised against delegating construction management at Air Force bases to the Army Corps of Engineers (Robinson 1959b:2).

The Navy did not request appropriated-funds family housing for fiscal year 1960, while the Air Force requested 108 units in the continental United States to support four radar sites (U.S. Senate 1959:16, 20, 329). The Air Force received family housing for an unspecified number of radar sites (U.S. Public Law 86-149 1959:343-51). For fiscal year 1961, the Navy was authorized to construct appropriated-funds housing at overseas locations only. The Air Force was authorized to build appropriated-funds family housing overseas, at unspecified aircraft control and warning sites, and miscellaneous facilities (U.S. Public Law 86-500 1960:193-206).

The Air Force requested 600 appropriated-funds family housing units for fiscal year 1962. This request comprised 300 units for Hill AFB, Utah, and 300 units for Minot AFB, North Dakota (U.S. House of Representatives 1961a:19, 471, 490). The Navy requested 1,000 units at seven domestic installations (U.S. House of Representatives 1961a:19, 471, 477). For the Air Force, housing was authorized only for Hill AFB, but the Navy's request was met fully (U.S. Public Law 87-57 1961:115-125). Harry R. Sheppard, Chairman of the House Subcommittee on Military Construction, voiced the opinion that the authorization indicated Congress was preparing to abandon the Capehart program in favor of appropriated-funds housing to meet military need (U.S House of Representatives 1961a:588).

Appropriated funds became the sole funding source for military family housing after 1962, when Congress failed to reauthorize the Capehart program. The number of units requested and authorized for construction using appropriated funds immediately increased drastically, reflecting the armed forces' continued need for family housing. For fiscal year 1963, the Navy requested 3,350 family housing units and received authorization for 3,204 units. The Air Force requested authorization for 4,992 units, and was authorized to build 3,059 units (U.S. Public Law 87-554 1962:291-292; U.S. House Committee of Representatives 1962:15, 22).

5.2.2 Family Housing Construction in Alaska

Most Air Force construction in Alaska was financed through the Military Construction, Air Force line item in Congressional authorizations because the cost of building materials in Alaska exceeded budget ceilings established for the Wherry and Capehart programs. Army and Air Force construction was overseen by the Alaska District Engineer, assigned to the North Pacific Division of the Army Corps of Engineers. The Air Force informed the Chief of Engineers of its construction requirements. The Chief of Engineers then briefed the District Engineer on the types of buildings needed, the design required, specific parameters for the project, and available funding. The District Engineering Division reviewed the project requirements with the Air Force and contracted with an architect-engineer firm to develop plans. Following review of the firm's plans and specifications, the Army Corps of Engineers solicited bids and selected a contractor through lump-sum award. The Corps of Engineers District Construction Division oversaw construction. Contractors hired their own labor, but the government provided food and housing. The government also provided concrete batching and mixing plants, and rented construction equipment, as requested (U.S. House of Representatives 1952a:3-5).

In 1950, Congress specified that the average cost per family unit was not to exceed $29,500, and the maximum allowable floor space was not to exceed 1,080 square feet (U.S. Public Law 564 1950:248). Also that year, the Department of Defense Housing Commission recommended the construction of multi-unit structures. It recommended that each unit consist of a living room, dining

alcove, and kitchen on the first floor; a bath and either two bedrooms with utility room, or three bedrooms, on the second floor; and storage space in the attic. The Commission recommended against the construction of basements due to cost (U.S. House of Representatives 1952a:6).

Between fiscal years 1946 and 1953, the Air Force had 2,513 family housing units built or scheduled for construction at Eielson, Elmendorf, and Ladd Air Force bases. This total represented approximately 55 to 65 per cent of the housing needed (U.S. House of Representatives 1952a:3).

In 1951, members of Congress, the Government Accounting Office, and the Comptroller General opened an investigation into construction in Alaska after receiving reports that Army and Air Force family housing projects were "characterized by slipshod methods, inferior materials, and lax supervision on the part of the Army Corps of Engineers" (U.S. House of Representatives 1952b:2). In December 1952, the House Committee on Government Operations issued several recommendations for improving construction practices and reducing costs. These recommendations included re-examining basic housing design to eliminate costly materials; re-examining cost ceilings for possible reduction; scheduling completion dates for utilities to coincide with housing; planning housing that met family sizes and did not duplicate available private-sector housing; more thoroughly examining housing; and, auditing expenses (U.S. House of Representatives 1952a:20).

5.2.3 Use of Appropriated Funds for Other Housing Programs

The Air Force and the Navy developed a variety of programs and strategies to address the family housing shortage. Some of these programs were implemented while others never received final Congressional approval.

5.2.3.1 Lustron Housing

The Navy attempted to solve its family housing shortage through the construction of prefabricated houses. To achieve this goal, the Navy contracted the Lustron Corporation of Columbus, Ohio, to construct 60 houses for enlisted personnel and officers at the Marine Corps Schools, Quantico, Virginia. Bungalow-style, two-bedroom and three-bedroom units were constructed between February and August 1949.

Lustron houses were an economical housing solution that provided mass-produced housing quickly and efficiently. The Lustron Corporation had an established civilian market when the Marines contracted with the company to provide military housing units. With prices ranging from $8,500 to $9,500 for a two-bedroom, single-story house, Lustron houses were an affordable housing alternative marketed to low- and moderate-income families. Lustron homes cost approximately 25 per cent less than conventional housing of the same size (*Columbus Dispatch* 1949).

Lustron houses were constructed of porcelain enamel on steel and featured amenities such as radiant heating, combination dish-clothes washers, floor-to-ceiling kitchen cabinets, linen closets in the dining rooms, vanities in the master bedrooms, and bookcases between the dining rooms and kitchens (Lustron Corporation 1948:3). The houses were marketed as low-maintenance buildings requiring little or no redecorating (Lustron Corporation 1948:3). The Lustron Corporation went out of business in 1950. Archival research has not identified additional Navy installations with concentrations of Lustron houses.

During early 1949, the Air Force's Strategic Air Command (SAC) developed a preliminary proposal for a Lustron housing program to meet SAC's immediate, short-term family-housing needs while details of the Wherry program were settled, and appropriations for long-term housing solutions were authorized by Congress (Headquarters Strategic Air Command 1949:1). Under the proposed program, airmen seeking to rent family housing would establish an association to administer funds from the servicemen, the government, and private sources to buy Lustron prefabricated housing. The Federal government would lease land to the association and provide roads and utilities. At a cost not to exceed $2,000, the 700 square-foot units – to be assembled by the airmen – would include an electric refrigerator, a kitchen stove, a water heater, a kitchen sink and cabinets, a bath or shower, a toilet, electric wiring and fixtures, plumbing connections, and a heating unit as needed for local weather conditions. Both the interior and the exterior of the units would be painted. Rent was proposed at $40, excluding utilities and insurance. Once the housing was in place, the Air Force would maintain roads and utilities; the association would administer and maintain the housing. The Air Force anticipated that associations created under the proposed program would retire their debt in less than five years; after debt repayment, the Air Force would take over the housing (Headquarters Strategic Air Command 1949:1-3).

Air Force officials endorsed exploring the proposal further. Officials from the Air Force, the Bureau of the Budget, and the General Accounting Office spent the spring and summer of 1949 discussing whether regulations allowed airmen's rental allowance to be paid to the association to amortize its debt, and whether the housing automatically would belong to the Federal government since it would be built on leased land.

By June, the Air Force sought to begin installing the units. It requested permission from the Bureau of the Budget to spend $3.1 million for grading, utilities, and roads to complement 2,657 Lustron units planned at 11 bases. The Air Force wanted the housing ready for occupancy within one year to provide housing as quickly as possible for airmen and junior officers. Air Force officials hoped this housing would improve morale, provide an environment conducive to family life, and boost re-enlistment rates among the lower ranks (Zuckert 1949a:1; Zuckert 1949b:1). The Reconstruction Finance Corporation was prepared to provide financing to the Lustron Corporation to purchase the units and use SAC housing association personnel to collect the monthly rent (Zuckert 1949a:2-3).

While the number of units per installation would change according to the amount of Wherry housing eventually assigned, the Air Force planned to build Lustron units at the following installations (Zuckert 1949a:1):

- Bergstrom AFB, Austin, Texas 154 Units
- Biggs AFB, El Paso, Texas 450 Units
- Castle AFB, Merced, California 150 Units
- Carswell AFB, Fort Worth, Texas 330 Units
- Chatham AFB, Savannah, Georgia 143 Units
- Davis-Monthan AFB, Tucson, Arizona 249 Units
- MacDill AFB, Tampa, Florida 100 Units
- Walker AFB, Roswell, New Mexico 250 Units
- Rapid City AFB, Rapid City, South Dakota 143 Units
- Smoky Hill AFB, Salina, Kansas 360 Units
- Spokane AFB, Spokane, Washington 328 Units

In July, legislation was drafted to permit the military to use appropriated construction funds to extend utilities and roads within Lustron housing areas (Myers 1949). However, in August, the program was delayed as the Secretary of the Air Force considered whether to issue the necessary

approval (LeMay 1949:1-3). Following a request from SAC to Air Force Headquarters to expedite approval, Colonel John C.B. Elliott, the Air Force's Director for Family Housing, responded with several concerns. These concerns included the use of airmen to construct the houses, rather than "competent contractors"; the government entering into a single source contract with the Lustron Corporation; and, the possibility that the SAC plan was not fully coordinated and was being advanced too hastily, in comparison to the yearlong negotiation among government agencies on the Wherry housing plan. In addition, the SAC plan called for Lustron housing at three bases with questionable futures: Biggs, Chatham, and Smoky Hill (Elliott 1949:2).

Elliott agreed that, pending approval from the Bureau of the Budget, SAC could install 500 units on two bases. Colonel Elliott specified that Offutt AFB serve as one of the pilot bases. As a condition of approval, SAC was required to provide Air Force Headquarters with all information on contracts, leases, and other details so that the two departments could work closely on coordinating the project. In the meantime, Elliott advised SAC to throw its efforts into the Wherry program, which had been carefully coordinated and was beginning to draw proposals from developers (Elliott 1949:3). A few days later, Eugene M. Zuckert, the Assistant Secretary of the Air Force, informed SAC officials that they would be authorized to install 750 units on two or three bases, and that the Bureau of the Budget was expected to approve $1 million for maintenance. However, Wherry housing had priority, and SAC was required to assume responsibility for labor and contractor problems associated with the Lustron project (Zuckert 1949c:1).

The SAC plan for Lustron housing was dealt a final blow in late August 1949 when the General Accounting Office indicated that it would not support issuing airmen quarters allowances in lieu of quarters provided by the government. As a result, the comptroller of the Air Force recommended that SAC officials abandon their plan and wait for housing to be provided under the Wherry program, which had become law earlier that month (Webber 1949:1). During this time, the Bureau of the Budget also recommended giving priority to the Wherry program, but issued guidelines for structured program operation for future alternative housing programs similar to the SAC plan. For instance, the Bureau of Budget suggested collecting enough rent to pay debt incurred for housing, interest, utilities, maintenance, upkeep, and overhead costs; requiring the appropriate military officials to supervise all construction; ensuring that all construction be undertaken in accordance with the installation's master plan; and, requiring that any associations formed to build housing maintain accounting records for audit (Pace 1949:1-2).

5.2.3.2 Other Prefabricated Housing

Prefabricated housing was considered one option for shrinking the military's family housing deficiency. Public Law 498, passed May 2, 1950, amended the military housing section (Title VIII) of the National Housing Act to authorize the use of prefabricated housing structures or components, or other "alternate materials or alternate types of construction." This construction had to provide "substantially equal value" compared to typical construction, and meet Federal Housing Administration standards (U.S. Public Law 498 1950:99-100).

5.2.3.3 Trailers

Air Force officials considered trailers as an immediate solution to the family housing shortage. In Alaska, for instance, a 100-unit trailer park was proposed for Ladd AFB in 1948. Twenty-six trailers already were located on base, and their occupants reported that they were warm throughout even the most frigid Arctic weather (Goodyear 1948:1, 13).

In 1954, the first year that Congress appropriated substantial family housing funds after the passage of the Wherry Act, Congress and military officials considered renting trailer units to military families. A total of 5,000 trailers were proposed to house Air Force and Navy personnel (U.S. Senate 1954:12-13). By 1961, a total 4,645 house trailers were located on installations in the United States, including single units at two Air Force bases and 3,911 at 18 Navy installations. The remainder were located on Army installations (U.S. House of Representatives1961b:438).

5.2.3.4 Transportable Housing

Transportable housing, developed in 1961, was "a new concept in housing developed primarily to fill critical housing needs at locations where permanent conventional housing cannot be justified" (U.S. House of Representatives 1961a:19). For fiscal year 1962, the Air Force requested funding for 256 "transportable family housing units" at 19 aircraft control and warning sites and the Gila Bend Gunnery Range. Private housing provided by the civilian market was not available nearby because the installations were isolated, but permanent housing at these locations was impractical because the missions of the installations could not be ensured over the long term. Transportable housing was defined as "dwelling units of modular design, so constructed and arranged by floor plan, to permit ready relocation from one site to another by overland movement, either by flatcar, truck-trailer, or by over highways" (U.S. House of Representatives 1961b:374). The 1,000 square-foot dwellings contained two or three bedrooms, a bathroom, a utility room, a kitchen, and a combined living room and dining room. The approximate cost of $14,000 per unit included utilities and other required support (U.S. House of Representatives 1961b:374). Because of its unique framing and bracing, the houses could be moved off one foundation and transported elsewhere (U.S. House of Representatives 1961b:400).

In early 1961, Air Force officials told the House Committee on Armed Services that bids had been received for 135 transportable houses at five aircraft control and warning sites, as a test of the idea. However, Rep. Carl Vinson, the committee chairman, declined to support the program because funding for the 256 units was not available, and a leasing program was planned to meet housing needs at aircraft control and warning sites. Vinson did pledge to form a subcommittee to examine the issue (U.S. House of Representatives 1961b:398-401). Transportable housing was not built during the period covered in the current study.

5.3 CONCLUSION

To further alleviate the massive housing shortage facing all branches of the military in the post-World War II period, Congress supplemented Wherry and Capehart construction programs with housing constructed by the services using appropriated funds. Overall, these funds were intended to finance military housing only in situations where the Wherry and Capehart programs could not be implemented. Wherry and Capehart programs were not designed to meet housing shortages in areas with high construction costs, such as Alaska, or in isolated locations with modest housing requirements that were unattractive to private-sector sponsors. During an era when the Wherry and Capehart programs were utilized most extensively to build military housing, Congressionally appropriated funding for housing was low. Appropriated funds also were used for other types of housing besides permanent single-family and multi-family units, including Lustron houses and trailers. Additional supplemental housing programs were proposed but were unsuccessful. These programs included the SAC proposal for Lustron housing associations and transportable housing. Overall, appropriated funds were not intended to close the gap between the housing provided by the Wherry and Capehart programs and the actual need, and did not do so.

6.0 THE SOLUTION: WHERRY, CAPEHART, AND APPROPRIATED-FUNDS HOUSING

6.1 PUBLIC HOUSING[2]

6.1.1 Authorization Levels for Low-Cost Housing

Low-cost housing policy during the postwar period provides a context for understanding Wherry and Capehart housing. In the immediate postwar period, government housing generally was known as low-cost housing. Today, such housing frequently is referred to as low-income housing. This change in terminology reflects a shift from characterizing economical "bricks and mortar" housing programs to characterizing the income levels of program participants.

Low-cost housing was defined as housing affordable to those below a certain income level. These levels varied by region. Low-cost housing nearly always was constructed by the local, state, or Federal government. Low-cost or public housing had a number of similarities with postwar military housing. The purpose of this summary is to analyze the differences and similarities among low-cost, military, and market-rate housing.

Wherry Act housing projects technically were not public housing because they were constructed and managed by the private sector. Projects constructed with appropriated funds and under the Capehart Act, in contrast, were government public housing. The Federal government owned and managed the housing units, which were assigned as military quarters. In some respects, the military faced challenges in addressing the postwar housing shortage similar to those faced by other public housing programs. These challenges stemmed from the Federal government's reluctance to expend limited financial resources to address housing problems.

President Truman supported public housing programs and proposed the construction of relatively large numbers of units. President Eisenhower, however, consistently recommended low funding levels for public housing (Hays 1985:94). Congress was unwilling to support public housing efforts. The Independent Offices Subcommittee of the House Appropriations Committee was responsible for housing appropriations during the 1950s and 1960s. A "greater proportion of southern Democrats and conservative Republicans, many of whom where hostile to the whole concept of public housing," served on this committee (Hays 1985:94). Federal leaders were opposed to active involvement in the low-income housing market because they believed the private sector would meet the demand (USAEC 2003:5-14). Similar arguments were made during the Congressional hearings on the Wherry Act (U.S. Senate 1949b:24).

Funding appropriated for public housing frequently did not correlate with Congressional authorizations. A similar issue arose with military housing. Although the private sector provided the upfront costs associated with Wherry and Capehart housing, Congress approved the number of units authorized for each installation, and later for each service.

Similar to public housing projects, Congress also approved the construction of many more units through military appropriated funds than ultimately were funded. The Housing Act passed in 1949 authorized the construction of 810,000 units of public housing over a six-year period (USAEC 2003:5-20). A total of 135,000 units were to be constructed each year. The authorization represented ten per cent of public housing need based on the decennial Census of Housing (Meehan 1975:19). Funds appropriated for public housing fell well below the authorization levels. Congress appropriated

[2] Public housing is defined as housing owned by the local, state, or Federal governments.

funds in 1953 and 1955; no funds were appropriated in 1954. The Korean Conflict further hampered the construction of public housing, as Federal resources went to supporting the war effort (Meehan 1975:19). Less than one-quarter of the authorized units were constructed by 1960 (Hays 1985:93).

The Housing and Home Finance Agency (HHFA) tracked the number of public housing starts. The number of public housing starts dramatically rose during the late 1950s and was attributed to the Capehart program. Public housing construction starts numbered 24,200 units in 1956 and 49,500 units in 1957 (HHFA December 1957:4). Capehart units represented almost half of the public housing starts in 1957. A total of 50,700 public housing units were started during the first eight months of 1958 and included Capehart units (HHFA August 1958:3). By August 1958, HHFA did not distinguish between Capehart Act housing and public housing constructed under other programs.

6.1.2 The Federal Public Housing Authority

In 1946, the Federal Public Housing Authority (FPHA) issued guidance for the development of low-cost housing. Recognizing the need to efficiently manage public funds, the FPHA encouraged controlling expenditures but cautioned against "skimping in the wrong places" (FPHA 1946:1). The FPHA recommended that public housing be designed to minimize maintenance, repair, and replacement costs to control overall costs (FPHA 1946:1). The FPHA also encouraged good project management. The agency noted that it had become standard practice, in many cases, to eliminate features and amenities to the detriment of projects in order to reconcile project bids with government estimates (FPHA 1946:1).

The FPHA further encouraged that the residential character of a project area be safeguarded through appropriate land zoning (FPHA 1946:8). Sites proposed for low-cost housing developments were to be accessible to utilities, police and fire services, waste collection, and street cleaning. In addition, project sites needed to be accessible to community amenities, such as transportation to employment centers, neighborhood shopping, schools, playgrounds, churches, libraries, theaters, and health-care facilities (FPHA 1946:8, 9).

Public housing authorities were established to create and operate low-cost housing projects. These authorities oversaw construction of public housing and its management. Effective management and efficient use of public funds were primary concerns of the housing authorities (FPHA 1946:1). In a survey of public housing authorities conducted by FPHA, agencies expressed their views on public housing. One agency noted that the private sector rarely supported public housing projects through the construction of commercial centers, and recommended projects locate near existing commercial centers or that such centers should be built as part of the public-funded project (FPHA 1946:9-10).

The FPHA also provided guidance on the design and location of public housing projects. The "Minimum Physical Standards" identified a setback of twenty or thirty feet from property lines for buildings located on heavily trafficked boundary streets and ten to fifteen feet for minor streets (FPHA 1946:29). Circulation within the housing project was a key design element. The "Minimum Physical Standards" also provided guidance on the type (parking lots or on-street) of parking and its location. Street width was determined in part by the incorporation of on-street parking. Centralized, off-street "parking courts" were preferred to on-street parking. Pedestrian access was of equal concern. According to the FPHA, sidewalks needed to be functional with primary, secondary, and tertiary circulation systems (FPHA 1946:40).

6.1.3 Financing Public Housing

The Federal government financed the construction of low-cost housing. From the 1930s until 1961, public housing was financed through debt service, i.e., interest and principal payments due on public debts. Land, utilities, operating reserves, and contingency funds were financed by the local housing authority (USAEC 2003:5-14). The rent charged to tenants covered all expenses related to the construction of public housing.

Congress was concerned that "no one with sufficient income to afford private housing would enter public housing or remain there..." (Meehan 1975:69). For this reason, eligibility for low-cost housing units was keyed to tenant income levels (USAEC 2003:5-14). Local housing authorities established rent and income levels. Tenants could be evicted once they achieved an income level enabling them to acquire housing in the private sector.

6.1.4 Cost Limitations and Design Standards for Low-Cost Housing

6.1.4.1 Cost Limits

Public housing provided safe, clean, and adequate housing that was not elaborate in design or more costly than private-sector housing. The housing was within the economic reach of low-income citizens (FPHA 1946:95).

Politicians were concerned that low-income housing recipients would take unfair advantage of government housing. Political leaders voiced concern that "luxurious" low-income housing units eliminated incentives for the poor to improve their economic condition (Hays 1985:96). Funds authorized for public housing were strictly limited in an effort to prohibit the construction of "luxurious" housing (USAEC 2003:5-15). As a result, many units were constructed using inferior materials and substandard construction techniques (Hays 1985:96-97).

Congressional efforts to limit expenditures for low-cost housing were echoed in military family housing initiatives. The Comptroller General of the United States criticized the services for including "luxury" items such as air conditioning, dishwashers, and high quality materials, such as plaster walls, in Capehart Act housing. These features were incorporated to improve the livability of the units (Comptroller General of the United States 1960).

6.1.4.2 Design Standards

Minimum design standards for the construction of low-cost housing were issued by the Federal government. The Federal Housing Administration (FHA) issued standards in 1959, which were revised in 1961 as *Minimum Property Standards for Low Cost Housing.* The 1961 standards were based on the FHA's *Minimum Property Standards for One and Two Living Units* developed for market-rate housing. The standards developed for low-cost housing were "somewhat below" those for private-sector housing (FHA 1961:1). The low-cost housing standards allowed the use of inferior interior and exterior materials and finishes.

The FHA standards established the bare minimums for housing quality and amenities. General guidance was provided for site planning, lot coverage, and building planning. Public housing units were not required to include kitchen and wall cabinet doors, finished flooring, closets, towel racks, soap holders, and toilet seats. Walls could be left unpainted and pipes exposed; elevators

stopped at every other floor in high-rise buildings (USAEC 2003:5-15-5-18; Friedman 1948:5-6). The minimum health and safety standards were employed in the construction of low-cost housing (Friedman 1948:6).

6.1.4.3 The Design of Low-Cost Housing

Low-cost projects initiated shortly before the enactment of the Wherry legislation provide insights into the prevailing Congressional concern over cost, as well as a basis for comparison on public housing design. In a survey conducted in 1948 by the Women's City Club of New York, Inc., residents of low-cost housing projects in New York City were questioned on their experiences on living in low-income housing. Residents lived in a variety of housing projects ranging from multi-story buildings in large complexes to modest rowhouses in garden-type complexes. These housing complexes were constructed during the early 1940s, and construction costs had been limited to $5,000 per unit (Friedman 1948:5).

Kitchen storage space was limited to six linear feet of shelving for food and general storage, and 12 linear feet for dish and utensil storage. Three-foot by two-foot wood counters, and a porcelain drain board over a laundry tub were supplied (Friedman 1948:24). Generally, residents of the housing projects found the food and dish storage space and work space inadequate (Friedman 1948:25). Some residents stored food on window sills and canned food in clothes closets (Friedman 1948:26). Other concerns were raised over the small size of the kitchen and the lack of an interior kitchen door (Friedman 1948:26).

General storage also was an issue. The bedrooms of the units were equipped with clothes closets and each unit had a closet for linens, but not all the closets had doors (Friedman 1948:27). Storage rooms for large items such as baby carriages, bicycles, and suitcases were located in building basements; however, a large percentage of families did not use these spaces because of poor security (Friedman 1948:27).

The rowhouse buildings included a "laundry compartment in the kitchen" for washing clothes and clotheslines in the rear yards (Friedman 1948:30). The other buildings surveyed incorporated laundry tubs in the kitchen with drying racks in units. In addition, "mechanical washing machines and drying bins" were housed in the basements of multi-unit buildings (Friedman 1948:30). With the exception of those residents who lived in the rowhouse buildings, the majority of tenants complained about the laundry conditions. Some buildings had only one washing machine and ten dryers for use by 118 families (Friedman 1948:33). Security was another concern raised by residents; fights and theft were major issues (Friedman 1948:33).

Tenants preferred wood floors, double-hung windows with safety devices, paint colors other than neutral paint schemes, well-lighted staircases, and protective covers over porches (Friedman 1948:34). Many residents wanted doors on the kitchens and better soundproofing. Residents complained about the open floor plan and preferred some type of separation between living rooms, kitchens, and foyers to eliminate odors and foot traffic, and to increase privacy (Friedman 1948:35, 36).

All projects included in the survey had a playground adjacent to the housing project. Selected projects had nursery schools, a baby health center, maternity care, and nursing service. Although the tenants appreciated nearby supervised playgrounds, they preferred on-site playgrounds sited at the fronts of the buildings to better supervise small children (Friedman 1948:39, 42). Residents also wanted community space for elderly tenants and indoor recreation space (Friedman 1948:40, 41).

Some projects lacked reasonably accessible neighborhood services. Tenants polled complained about the distance to shopping and grocery stores. The housing projects were accessible by bus, but not by subway. Only one project had on-site medical facilities. None of the projects provided public telephones (Friedman 1948: 44).

The authors concluded that tenants preferred small-scale projects such as rowhouses to the large-scale, multi-story buildings. Also desired were larger units, a dinette rather than eating in the kitchen, closets doors, better and secure storage, adequate laundry facilities, toilets with seat covers, double-hung windows, recreational facilities, and better soundproofing (Friedman 1948:52).

6.1.4.4 The Construction of Low-Cost Housing

The FPHA encouraged modular design in the development of plans for low-cost housing. Public housing projects were constructed with a variety of materials, including brick, concrete, tile or "other back-up material" veneered with brick, and frame buildings "with various coverings" (FPHA 1946:187). A major complaint of public housing officials was leaking exterior walls, which the FPHA attributed to poor workmanship, rather than to poor materials (FPHA 1946:187). Concrete block walls were used throughout the country for economy. Numerous building technologies were employed, including slab on grade, solid framed concrete slabs, and wood.

Roof design was dependent upon building type, comparable construction and maintenance costs, need for attic space, and aesthetics (FPHA 1946:195). Different roofing materials were used to clad gable roofs and included cement asbestos shingles, Grade-A slate, and roofing tile. Wood shingles were discouraged because they posed a fire hazard.

The FPHA encouraged the construction of basements for a number of reasons. They provided space for storage, a location for heating equipment, an indoor recreation space for tenants during inclement weather, and termite prevention. In contrast, the FPHA discouraged slab on grade construction or buildings with crawl spaces because the structures were susceptible to water penetration and created an environment conducive to the deterioration of structural members and to termite infestation. Slabs and crawl spaces also were seen as related to the accumulation of dangerous gases. Both constructions made repairs difficult (FPHA 1946:115).

Interior walls were constructed with wood wall studs and floor joists covered in tile or plaster. Glazed tile or brick was used in public spaces. Plaster substitutes, such as gypsum board, were used in temporary war housing, but were considered too new and unproven for low-cost housing projects (FPHA 1946:209).

Interior finishes and trims were modest. According to the FPHA, windows, doors, stairways, kitchen cabinets, and other decorative trim "must be exceedingly simple, sturdy and functional to serve in public housing. Materials and accessories were selected for minimum maintenance" (FPHA 1946:203). Trim around windows and doors was characterized by thinness of line, simplicity of form, ease of cleaning, and durability" (FPHA 1946:206). Metal door jambs were common. Interior woodwork generally comprised bullnose and cove moldings (FPHA 1946:206). Concrete floors were found in many public housing projects. Increasingly, asphalt tile, wood, or "other applied surfaces" were applied over poured concrete. The FPHA recommended exposed poured concrete floors for economy; however, floor coverings were permitted where budgets allowed (FPHA 1946:212).

The FPHA encouraged formal landscaping for public-housing projects. Landscaping made public spaces more inviting as well as defined and established a hierarchy for activity areas. Developers of public-housing projects were required to retain existing trees.

6.2 MANUALS FOR THE CONSTRUCTION OF AIR FORCE AND NAVY HOUSING

The FHA developed *Minimum Property Standards* for housing constructed with FHA-guaranteed mortgages. Wherry and Capehart Act sponsors with FHA-guaranteed mortgage insurance complied with the *Minimum Property Standards* in the design and construction of their projects. The *Standards* are discussed in detail in Chapter 3 of this study.

The Department of Defense issued its own instructions for the construction of military family housing in March 1961. The Navy developed several additional instructions and regulations on the development of Wherry and Capehart housing and the implementation of the two programs. The Air Force developed regulations for construction under the Capehart Act; however, the archival record is unclear as to whether such standards and criteria were developed for Air Force Wherry housing.

The design manuals in use between 1949 and 1962 included:

- *Design Standards for Construction of Permanent Family Housing for Federal Personnel* (22 June 1953, revised May 1957) issued by the Bureau of the Budget under Budget Circular A-18 for the HHFA;
- *Minimum Property Standards* issued by the FHA;
- "Instruction on the Policy, Standards and Criteria for the Construction, and Maintenance and Operation of Family Housing" issued by the Department of Defense;
- *Housing Administration* (1954) issued by the Bureau of Yards and Docks;
- *Air Force General Design Criteria for Construction of Family Housing*, revised 18 January 1956 and 30 March 1956; and,
- Bureau of Yards and Docks Instruction 11101.38 issued 20 April 1956 and revised 23 June 1959.

6.2.1 The Design of Wherry Housing

Manuals for the design and construction of Wherry housing for the Air Force and the Navy, including the Marine Corps, were not available. The archival record is unclear as to whether either service developed such manuals or relied solely on guidance provided by the FHA and its *Minimum Property Standards*. Navy instructions mandated compliance with the HHFA's *Design Standards for Construction of Permanent Family Housing for Federal Personnel*.

6.2.1.1 Design Standards for Construction of Permanent Family Housing for Federal Personnel

The HHFA developed the *Design Standards for Construction of Permanent Family Housing for Federal Personnel* in 1953. The document set the bar "below which permanent housing should not be constructed, and above which Federal funds need not to be invested to provide adequate housing" (HHFA 1953b:v).

The standards were comprehensive directives on building design and covered such topics as space and unit arrangement, structural design principles, floors, interior and exterior wall coverings, foundations, and footings. The standards did not address site planning.

6.2.1.2 Revisions to 1953 *Design Standards*

The HHFA updated the Design Standards in 1957. The revised standards incorporated recommendations from numerous Federal agencies as well as the FHA's *Minimum Property Requirements* (HHFA 1957:v). The new document standardized the size of closets and the number of shelves for kitchen and linen storage, as well as requiring the design of kitchen cabinets and drawers as closed units. Garages and carports also were addressed in the revised standards. Garages were preferred while carports were appropriate based on local weather conditions (HHFA 1957:7).

6.2.1.3 Navy Design Guidance

The Navy issued the technical publication *Housing Administration* (1954), which outlined the policy for the construction of all housing, including Title VIII Wherry housing. The technical publication applied to the procurement, administration, maintenance, and operation of family housing at shore activities (Bureau of Yards and Docks 1954:1-1). The document excluded housing constructed with appropriated funds for the Marine Corps (Bureau of Yards and Docks 1954:1-1).

The publication presented general guidance for the design of Wherry units. Units that afforded the greatest space, comfort, and service within the rent parameters were desirable. Buildings were to reflect regional design and construction techniques. "Unusual effects by means of over-ornamentation or a bizarre use of materials" were to be avoided (Bureau of Yards and Docks 1954:3-44). No room, hall, or other dimensions were recommended because "these depend largely on cost areas and the level of income of the tenants for whom the housing is planned" (Bureau of Yards and Docks 1954:3-44). Multi-family buildings and rowhouses were unsuitable for higher-ranking officers; however, these house types were permissible for lower-ranking enlisted personnel. The Navy stressed that housing was to reflect the rank of the occupant; it was undesirable to provide "unusual value in enlisted housing at the expense of officer housing" (Bureau of Yards and Docks 1954:3-44). Housing constructed for officers typically included higher quality finishes and greater amenities in keeping with this protocol.

The Commanding Officer and the District Public Works Officer (DPWO) made the decision on the appropriateness of including commercial facilities in the housing project and related mortgage. Commercial construction was approved on a very limited basis, and decisions were based on existing commercial development or the potential for such development (Bureau of Yards and Docks 1954:3-42).

Grid street plans were discouraged in the design of Navy Wherry neighborhoods in favor of curvilinear streets. Grid plans were more expensive to construct due to the number of cross streets and

street intersections, and were seen as monotonous and more restrictive than curvilinear streets (Bureau of Yards and Docks 1954:3-44).

6.2.2 Design Manuals for Capehart Housing Projects and Appropriated-funds Housing

While the Navy updated the Capehart design criteria almost yearly, few substantive changes were made to the overall standards. The Air Force also developed design standards for its Capehart housing. Attempts to locate *General Design Criteria for Construction of Family Housing* (10 December 1958) were unsuccessful.

6.2.2.1 Department of Defense Instructions for Family Housing

The Department of Defense "Instruction on the Policy, Standards and Criteria for the Construction, and Maintenance and Operation of Family Housing" applied to all military family housing constructed after 1961, regardless of the funding source. The instruction provided general construction parameters for family housing, and did not provide specific designs for units or neighborhood layout (Morris 1961). The criteria and guidelines for design, car shelters, outdoor living, kitchen and laundry equipment, and landscaping were previously identified in a "Department of Defense Policy Statement Concerning Design and Construction of Family Housing" issued 16 July 1959 (U.S. Department of Defense 1959).

The 1961 Instruction listed all legislation applicable to net area and cost ceilings for family housing. Numerous laws were cited. Sections 4774, 7574, and 9774 of U.S. Code Title 10 specified the net area for family housing constructed with appropriated funds. Section 503 of Public Law 85-104 established the net area for family housing constructed under the Capehart Act. The cost limitations, by grade, for family housing constructed with appropriated funds were established under Public Law 86-630, Section 109. Section 803(b)(3)(B) of the National Housing Act, as amended, established the cost limitations on the average cost per living unit for housing constructed under the Capehart Act. Public Law 86-500, Section 507(c) created the cost limitation for individual units constructed under the Capehart program. The limitations on the use of appropriated funds for land acquisition, site preparation, and utilities for Capehart housing were stipulated in Public Law 155, Section 505. Procurement of architecture and engineering services was governed by Public Law 345, Section 406. Architecture and engineering fees were not to exceed those permitted under the schedule of fees allowed by the Public Housing Administration (Morris 1961:4). Appropriated funds could be applied on a reimbursable basis for the administration, supervision, and inspection of Capehart units under construction under Public Law 814, Section 306. The amount of the appropriated funds for administration, supervision, and inspection was not to exceed three and a half per cent of the cost of each project (Morris 1961:4).

The policy and standards outlined in the HHFA's *Housing Standards* and the Department of Defense folio "Criteria for Family Housing under Public Law 465/83rd Congress" issued in January 1955 were applied to housing design (Morris 1961:4). Family housing projects were to be adapted to the climatic conditions, construction materials, and building techniques used in the region (Morris 1961:4).

Recognizing the military's preferences, the Instruction stated that semi-detached units "normally shall be provided" (Morris 1961:5). Single-family units were reserved for majors, lieutenant commanders, and higher-ranking officers. "Row living units may be provided" to conform

to site conditions or to comply with cost limitations (Morris 1961:5). The number of bathrooms in each unit corresponded to unit size and varied from one to three (Morris 1961:5).

The Instruction contained specifications on kitchen appliances and laundry equipment. A range, refrigerator, and exhaust fan were provided for each dwelling unit. Garbage disposals were optional. Housing for Colonels, Navy Captains, Generals, and Admirals included dishwashers. At a minimum, connections for washers and dryers were required; clothes washers and dryers were preferred (Morris 1961:5).

The construction of basements depended on site conditions and costs. Full basements were considered for two-story units and units constructed in cold climates. One carport was designed per living unit. Although HHFA encouraged construction of garages, military guidelines encouraged carports. Garages were constructed only in locations with winter temperatures of 10 degrees Fahrenheit or colder, and in locations with constant exposure to salt air or high winds (Morris 1961:5). Terraces or porches were options for each living unit.

Construction materials reflected economy and durability. In multi-unit buildings, structural components, walls, and floors were masonry, concrete, and/or steel whenever permitted within cost limitations. New materials and construction techniques were used "wherever economic or functional advantage is to be gained" (Morris 1961:6). American Society for Testing Materials (ASTM) and/or commercial construction specifications were referenced in overall project specifications to ensure uniform quality in materials and products (Morris 1961:6). Descriptive specifications could replace requirements for specific products. Proprietary names were avoided in developing project specifications; three options had to be provided in cases where proprietary product names were cited (Morris 1961:6).

Air conditioning and evaporative cooling systems were provided in locales identified in Department of Defense Instruction 4270.7 "Air Conditioning, Evaporative Cooling, Dehumidification and Mechanical Ventilation." Heating systems outside these authorized areas were designed to easily and economically accommodate an air conditioning system (Morris 1961:7). Project design within areas authorized for air conditioning was subject to additional design considerations. These considerations included reduced window sizes; preference for fixed windows; higher window sill heights to increase passive cooling from roof overhangs; reduced glazing on west and southwest elevations; the avoidance of window walls, picture windows, and fully glazed doors on west, southwest, and east elevations (double-pane insulating glass was used in such circumstances); preference for light-colored, reflective roofing surfaces; siting of car shelters on the west and southwest sides of living units; and landscapes designed to reduce sun load (Morris 1961:8). The housing designs also adopted modular measure to permit "construction by conventional methods, on-site precutting and assembly, factory precutting, factory prefabrication, or any combination of these methods" (Morris 1961:11).

Project standards and criteria were applied uniformly to ensure military housing that was comparable in terms of equipment, quality, unit size, and livability, regardless of location or funding mechanism (Morris 1961:11). When possible, "meritorious housing designs previously used" in the same region were considered (Morris 1961:11).

The following features were necessary for a "complete" house: range; refrigerator; adequate kitchen cabinet and counter space; kitchen exhaust fan; washer and dryer connections; air conditioning, evaporative cooling, or mechanical ventilation; screens; Venetian blinds, window shades, or drapes; and adequate bulk storage. Required site improvements included utility and

telephone service; roads, driveways, parking, walks, and streetlights; basic landscaping; drainage systems; pads for refuse cans; and, safety fencing.

Dwelling units were to be sited informally with consideration given to topography and other natural features, weather conditions, view, and occupant's privacy (Morris 1961:13). Landscaping was to retain existing trees and ground cover to the maximum extent possible. The stabilization of finished grades was to be achieved through the "economical selection" of lawn seed and sod (Morris 1961:13). Simple, low-maintenance shrubs and trees were to be planted.

6.2.2.2 Air Force Design Guidelines for Capehart Housing

The Air Force codified its design criteria for family housing in *Air Force General Design Criteria for Construction of Family Housing*, revised 30 March 1956. All housing was to comply with the FHA *Minimum Property Standards* and the HHFA's *Design Standards for Construction of Permanent Family Housing for Federal Personnel*. The Air Force criteria for Title VIII housing were revised 30 March 1956, after the Capehart legislation was enacted. The criteria discussed all aspects of design including site design, exterior design, interior layout, construction standards, and utilities. Architecture & Engineering responsibilities also are detailed in the document. Table 10 summarizes housing sizes based on rank, contained in the criteria.

Table 10. Size of Air Force Capehart Housing Units

Rank	Square Footage	Number of Bedrooms	Housing Type
General	2,100	4 (with 2 baths)	Detached
Commander	1,837	4 (with 2 baths)	Detached
Colonel	1,670	4 (with 2 baths)	Detached
Major, Lt. Colonel	1,400	4	Detached or duplex
Major, Lt. Colonel	1,400	3	Detached or duplex
Lieutenant, Captain	1,250	4	Duplex or row
Lieutenant, Captain	1,250	3	Duplex or row
Lieutenant, Captain	1,100	2	Duplex or row

Source: *Air Force General Design Criteria for Construction of Family Housing* (U.S. Air Force 1956:11)

The sites for family housing had to comply with the base master plan. Airmen and officer housing were to be separate; a street separation was deemed sufficient. Play areas were to be provided, and the services of professional landscape architects or planners were desirable (U.S. Air Force 1956:1). Gently winding streets that followed natural contours or looped streets were preferred; long, straight streets and cul-de-sacs were to be avoided. One street that provided access to the neighborhood without going through the base was preferred. The design and layout of the neighborhoods were to provide street outlets for future expansion areas (U.S. Air Force 1956:1).

Officer single-family and duplex units were to be constructed at a density of four units per acre. Airmen single-family and duplex units were to have a density of five units per acre. Rowhouses in "garden apartments" could be constructed for officers and airmen with a density of eight units per acre (U.S. Air Force 1956:1). Single-family units were preferred for all grades when economies in site design, utilities, and construction costs were achieved (U.S. Air Force 1956:1). One- or two-story rowhouses were to be constructed only in those circumstances where "site space limitations and/or building costs prohibit the obtaining of single or duplex housing" (U.S. Air Force 1956:3).

The design of the neighborhoods was to consider local climate, customs, and methods of construction to ensure favorable comparisons with housing in the civilian market (U.S. Air Force 1956:2). The criteria recognized that repetition in floor plan was necessary; however, variation in exterior materials and fenestration, variety in color, reversed and re-oriented plans, and staggered setbacks were encouraged to "eliminate a stereotyped and military type of appearance" (U.S. Air Force 1956:3). The Air Force encouraged the use of some masonry on building exteriors.

Units could include basements, site conditions and cost permitting. A number of roofing materials, such as built-up roofing, wood, asphalt, and asbestos shingles, and slate, clay, or cement tile were approved.

Open floor plans were encouraged for their feeling of spaciousness (U.S. Air Force 1956:3). Large expanses of windows were not recommended due to heat loss and costs associated with providing draperies (U.S. Air Force 1956:3). Furniture placement was considered in the height and placement of windows. Wood, steel, or aluminum, double-hung, sliding, casement, or awning windows were acceptable. Preferred flooring materials included hardwood, resilient, and tile flooring. Three brands and model numbers for all equipment were required in specifications. All specifications were to include a disclaimer stating that the Air Force was not endorsing one brand over another (U.S. Air Force 1956:9). Materials and equipment were to meet Federal specifications, ASTM Standards, or other acceptable trade or craft standards (U.S. Air Force 1956:9).

The plans for the housing units were characterized in detail. All units were to include an entrance hall, with coat closets located adjacent to the entrance. Two- and three-bedroom units had one bathroom; costs permitting, an additional half-bath or full bath was provided in three- and four-bedroom units. Two baths were provided in four-bedroom units constructed for Colonels and Generals. The additional half or full bath was to be located off the master bedroom. Closets and storage space were to be as large as possible to accommodate "the many changes of clothing and other articles required by the military" (U.S. Air Force 1956:4). Units included both linen and towel closets.

Kitchens were to provide direct access to the dining area; dining areas separated from the living rooms by folding partitions, walls, or decorative screens were preferred for quarters for Generals and Commanders. Kitchen layout was to take into consideration the minimum number of steps between equipment (U.S. Air Force 1956:6). Garbage disposals and dishwashers for officer housing were additive items and were to be provided, cost permitting. All units were provided with hook-ups for washers and dryers. Heating systems that allowed for the future installation of air conditioning were encouraged when possible (U.S. Air Force 1956:8).

Carports or garages were to be provided for all units, including rowhouses. In the case of rowhouse construction, garages or carports were to be arranged in compounds. Garages were considered a basic item for single-family units regardless of rank; carports were additive items for all other building types.

Landscaping was to include lawn seed and sod. Existing specimen trees and shrubs were to be retained and incorporated into landscape plans (U.S. Air Force 1956:2). Plans also were to include streetlights at intersections.

6.2.2.3 Navy Guidance on the Design of Capehart Housing

The Navy formalized its Capehart procedures in April 1956 when the Bureau of Yards and Docks issued BUDOCKS 11101.38 for *Capehart Housing Development Program and Procedures for*

Site Selection and Architect-Engineer Contracts. The overwhelming number of the criteria outlined in the 1956 document were unchanged in the 1959 revisions. The 1956 procedures explored in detail the process for soliciting and contracting with architecture and engineering firms (Bureau of Yards and Docks 1956).

Capehart projects were to be developed to the satisfaction of the Commanding Officer, the FHA, and the DPWO. The architecture and engineering firm was to consult with each party to ensure compliance with their requirements (Bureau of Yards and Docks 1956:4).

At activities slated for both Capehart and appropriated-funds housing, the Navy expected houses constructed under both programs to be identical in design and quality. Where Capehart housing already had been constructed, the Navy encouraged the reuse of Capehart plans to the maximum extent possible for appropriated-funds housing (Peltier 1961:2). As a result, Navy housing constructed through funds appropriated by Congress had many of the same features and and similar designs to those built under the Capehart program.

6.2.2.3.1 Navy Design Guidelines

The Navy's Capehart housing design criteria established general parameters for the program. Construction standards met or exceeded those established in the FHA's Minimum Property Standards or the *Design Standards for Construction of Permanent Family Housing for Federal Personnel* prepared by the HHFA. The location of Capehart housing projects was required to conform to the installation master plan. Projects were not required to meet local zoning ordinances or building codes if they were located on-station. Officer and enlisted housing was separated, with a road separation deemed sufficient.

Gently winding roads that followed natural contours or looped streets were preferred and increased "the charm of the community" (Bureau of Yards and Docks 1956:1). Rectangular grids and long straight streets were not recommended because they were considered monotonous (Bureau of Yards and Docks 1956:1). Sidewalks were required only on one side of the street except in those cases where the street separated enlisted from officer housing, in which case sidewalks were provided on both sides of the street.

Off-street parking was to be provided in the ratio of one parking space per dwelling unit. Garages and carports were treated as deductive bid items. When rowhouses were constructed, garages and carports were arranged in compounds. Garages were allowed where climate prohibited open carports. In 1956, the square footage of Capehart units for enlisted personnel was fixed at:

- 880 square feet for a two-bedroom unit
- 1,000 square feet for a three-bedroom unit
- 1,080 square feet for a four-bedroom unit ("Briefing Memorandum for the Chief" 1956).

Building density was not to exceed the following parameters: four units per net acre for single family units, five units per net acre for semi-detached units, and eight units per net acre for rowhouse units.

Basements were eliminated from the design of Capehart housing, except where climatic conditions precluded the use of carports. Slab-on-grade foundations or wood frame over crawl space were preferred.

For the interior design of the units, halls were to be kept to a minimum and were to provide access between bedrooms and baths (Bureau of Yards and Docks 1956:4). Direct access between the kitchen, dining room, carport, and service areas was preferred. Dining space was to have direct access to the kitchen and could be achieved through an ell in the kitchen; however, preferred house designs for Flag Officers included a separate dining room divided from the living room by a folding or solid partition (Bureau of Yards and Docks 1956:4). Plaster or drywall was recommended for interior finishes.

The use of some masonry on the exterior of buildings was desirable when possible. One- or two-story units were preferred, as were single-family and duplex units. Rowhouses were permissible when site space limitations dictated their construction or due to high construction costs. All units were to include two, three, or four bedrooms. When bedrooms were located on the second floor of two-story buildings, a half-bath was to be provided on the first floor, cost permitting.

6.2.2.3.2 The Informal Board to Evaluate Capehart Housing

In April 1959, the Chief of the Bureau of Yards and Docks created an "Informal Board to Evaluate Capehart Housing." The board comprised members from the Housing, Maintenance, and Engineering Divisions of the Bureau of Yards and Docks. The board was created to evaluate existing Capehart housing and to rewrite the Capehart housing criteria for future projects. The Washington, D.C. architecture firm Keyes, Lethbridge & Condon surveyed Capehart projects constructed by the Army, Air Force, and Navy. Their results were presented in an April 1959 report, titled *Inspection, Study and Analysis, Capehart Housing Projects*. In addition, G. Korink with the Housing Division, Bureau of Yards and Docks, inspected Capehart housing at some Navy, Air Force, and Army installations. The results of these evaluations were incorporated into the board's recommendations.

The consensus of the board was that the Capehart program provided "excellent housing of high quality," although discrepancies and areas of improvement were noted (Bureau of Yards and Docks 1959b:2). The report summarized site visits made to seven installations, summarized deficiencies, suggested improvements to Capehart housing, and developed preliminary site planning and design criteria for Capehart housing.

The purpose of the review board was to rewrite the Capehart planning and design criteria, which was achieved through a number of directives and instructions. The Bureau of Yards and Docks issued design and construction criteria on 29 January 1957 for Capehart housing that included general criteria and referenced the FHA's *Minimum Property Standards*. In addition, higher authority issued directives and policy statements on Capehart housing. These directives and policy statements were issued in Instructions 11101.43S and 11101.45, and covered construction and design standards, floor areas, density, and incorporated Department of Defense and Bureau of the Budget requirements and guidance (Bureau of Yards and Docks 1959b:6). The design criteria prepared by the board were developed specifically for Capehart housing, but they were intended also to be used for appropriated-funds housing (Bureau of Yards and Docks 1959b:12).

During the site visits, the board reviewed plans, looked at the housing, and talked to residents, specifically the wives, and DPWO and station personnel. The seven visits included NSGA Winter Harbor, Maine; MCAS Cherry Point, North Carolina; MCAAS New River, North Carolina; MCAAS Beaufort, South Carolina; MCSC Albany, Georgia; NAAS Chase Field, Texas; and NMC Point Mugu, California. The board also made inspections of other housing areas at other installations for comparison purposes. These site visits included Wherry housing at Camp Lejeune, North Carolina; Wherry housing at Cherry Point, North Carolina; married officer quarters at Beaufort, South Carolina;

Capehart housing at Turner AFB, Georgia; married enlisted men's quarters at Albany, Georgia; and Capehart housing at Oxnard AFB, California.

The board concluded that the "Capehart Program is producing a very livable house of excellent appearance and good quality" (Bureau of Yards and Docks 1959b:11). The Capehart housing was considered the "best in many years" (Bureau of Yards and Docks 1959b:13). Although the housing had few "gross problems," a considerable number of "minor deficiencies" were noted (Bureau of Yards and Docks May 1959b:11). The board noted that the $16,500 limit was more than adequate, even with the inclusion of many additives. The project at Winter Harbor, Maine, was the only exception (Bureau of Yards and Docks 1959b:11).

The report prepared by the board drew a number of conclusions. The board determined that there was no economic advantage to using factory-prefabricated houses. The board noted that extensive site improvements were planned for several projects; however, the board felt that resources would have been better used on higher quality materials and equipment. Some projects were completed well below the $16,500 limit, and again, the board determined that higher-quality materials could have been used. The board concluded that the highest-quality housing was the ultimate desire, even at the expense of site improvements. The board urged the provision of more additives in the bidding document to ensure the best-quality housing within the $16,500 limit (Department of the Navy Bureau of Yards of Docks 1959b:14).

Other conclusions focused on the design criteria for Capehart housing. The board felt the Capehart criteria should be reviewed and updated annually. Additionally, the criteria should be kept to a minimum to allow freedom in the field. Standardization of details and materials should be implemented to the greatest extent possible (Bureau of Yards and Docks 1959b:16).

The board summarized the deficiencies and made suggestions for improvements. These suggestions were divided into broad categories including: site planning, dwelling unit planning, and construction, among other topics.

The board prepared "Criteria and General Requirements for Site Planning and Design of Capehart Housing (Criteria and General Requirements)" dated 20 May 1959, and recommended its adoption. These recommendations were substantially adopted by the Bureau of Yards and Docks on 23 June 1959 as instruction BUDOCKS 11101.57. There were very minor differences between the May 1959 draft and the final document in June 1959. The final document was similar to the earlier 1956 criteria.

The "Criteria and General Requirements" provided guidance on site planning, drawings and specifications, unit design, construction (such as fire protection, insect and fungus damage prevention, foundations and footings, interior finish, and floors), mechanical equipment systems and equipment, utilities, and roads and streets. Guidance also was provided on miscellaneous items, such as recreation areas and equipment, mail boxes, house numbers, clothes poles, and planter boxes.

As in earlier Navy criteria, Capehart projects had to meet the *Minimum Property Standards* developed by the FHA or the *Design Standards for Construction of Permanent Family Housing for Federal Personnel* issued by the HHFA. Architecture and engineering firms needed to consult with the local office of the FHA to coordinate and comply with its standards and policies (Bureau of Yards and Docks 1959a:2-3).

The location of Capehart neighborhoods had to comply with the base master plan. Capehart housing planned at air stations was subject to a separate instruction (Bureau of Yards and Docks

1959a:5). Officer and enlisted housing were to be separate from one another. Children's play areas were to be located at the rears of the housing units, with a neighborhood play area centrally located (Bureau of Yards and Docks 1959a:5). Existing trees and shrubs were to be preserved where possible (Bureau of Yards and Docks 1959a:5).

The Navy encouraged the construction of single-story or two-story, single-family or duplex units, although single-family units were preferred. Because multi-family units generally were discouraged, only the absolute minimum was constructed. When they were essential to "meet economic limitations," the units were to be grouped in such a way as to create "small neighborhoods" of 12 to 20 families (Bureau of Yards and Docks 1959a:5). The siting of rowhouse units in parallel rows was strongly discouraged (Bureau of Yards and Docks 1959a:5, 10). Multi-family units were to include backyard screening, privacy, and the separation of pedestrian and vehicular traffic. Semi-detached units were to be joined at the carports or garages (Bureau of Yards and Docks 1959a:5). Carports or garages were to be included in the design of all single-family units; they were considered to be additive items for all other unit types. When designed with multi-family units, carports or garages were to be sited in a compound. Garages were to be designed for use in climates of 10 degrees Fahrenheit or colder, or when salt air, extreme winds, or sandstorms were a factor.

Buildings were to be set back from the street at such a distance as to allow for a parked car in the driveway without blocking the sidewalk. Flag officer and commanding officer quarters were to include service yards for the location of clothes poles, gardening equipment, and trash cans.

Straight roads and rectangular grids were strongly discouraged. Instead, looped and gently curving streets that followed the contours of the land were preferred. Rear access roads were not permitted. Although concrete curbs and gutters were required, sidewalks could be eliminated altogether for financial reasons or included as an additive bid item. Parking was provided in a variety of ways. For off-street parking, one space per dwelling was to be provided. Parking included driveway space for single-family and semi-detached units. Parking compounds were recommended for multi-family units.

Landscaping requirements consisted of some "growing plant life [that] should be visible from all dwellings" (Bureau of Yards and Docks 1959a:7). In addition, plantings should be designed to screen "objectional [sic] structures" (Bureau of Yards and Docks 1959a:7). Some construction bids called for the contractor to bid on the cost of providing top soil and planting grass. At least one streetlight was to be provided at each street intersection; adequate lighting was required for parking compounds (Bureau of Yards and Docks 1959a:35). Recreation areas and equipment were to be considered, land and funds permitting.

The design of units was to reflect local climatic conditions, materials, customs, and methods of construction (Bureau of Yards and Docks 1959a:10). Variation in materials, orientation, and fenestration were strongly encouraged to eliminate monotony. The use of some masonry on all units was encouraged (Bureau of Yards and Docks 1959a:10). Acceptable alternatives included frame, frame and masonry, solid masonry, or brick veneer (Bureau of Yards and Docks 1959a:19). Foundations were to be concrete or masonry units.

The amount of living space was prescribed in Public Law 626, 80th Congress. Unit size was dependent on rank. All two-bedroom Capehart units were to be designed to allow for future expansion to three-bedroom units where feasible (Bureau of Yards and Docks 1959a:11). For flag officers and captains who also were commanding officers, the four-bedroom, three-bath unit included one bedroom and one bath for a servant (Table 11).

Table 11. Size of Navy Capehart Housing Units

Rank	Square Footage	Number of Bedrooms	Number of Baths
Flag Officers	2,100	4 (100% of units)	3
Captain (if Commanding Officer)	1,670	4 (100% of units)	3
Captain, Commander, Lt. Commander	1,400	3 (80% of units) 4 (20% of units)	2 (80% of units) 2 (20% of units)
Ensign and Warrant Officers	1,250	3 (75% of units) 4 (15% of units) 2 (10% of units)	2 (75% of units) 2 (15% of units) 1 ½ (10% of units)
Enlisted personnel	1,080	3 (75% of units) 4 (15% of units) 2 (10% of units)	2 (75% of units) 2 (15% of units) 1 ½ (10% of units)

Source: Bureau of Yards and Docks 1959a:12.

A door was to separate the kitchen from the main living area, with the dining room directly accessible from the kitchen. If the plan could accommodate a design in which the kitchen was not in full view of the living room, then it was not necessary for the kitchen to have a door. Kitchen design should "minimize a housewife's steps" and incorporate an eating space in addition to the dining room (Bureau of Yards and Docks 1959a:15). The guidelines described the amount of counter space, type of countertop, and the amount of cabinets and cabinet space. L-shaped or U-shaped kitchens were preferred.

Bulk storage was recommended for each unit in the following amounts: 40 square feet for two-bedroom units, 50 square feet for three-bedroom units, and 60 square feet for four-bedroom units. Shelving was to be provided in a portion of the bulk storage area. Closets were to be provided in each bedroom in addition to a coat closet in the entry.

Baths were provided in the master bedroom. In recognition of resident complaints, the new guidelines stated that a showerhead was to be provided for every tub. Either a half-bath or a full bath was to be provided when practical to minimize the need for guests to enter the bedroom area to use the bathroom.

Basements were only to be provided "where site or extreme climatic conditions made them advisable or economical" (Bureau of Yards and Docks 1959a:15). Slab-on-grade foundations were preferred, but wood-frame floors with crawl spaces were acceptable. Split-level units were permissible when terrain made them economically feasible. Utility rooms were to be provided in projects that did not include basements.

Interior walls were to be finished in drywall or plaster. Windows could be wood, steel, or aluminum sash, double-hung, sliding, or awning type. Hardwood flooring was preferred in the main living spaces and bedrooms. Vinyl asbestos or vinyl tile were to be used on kitchen floors. Bathroom floors could be ceramic mosaic tile or terrazzo. The guidelines described the types of accessories that should be included in bathrooms. Chimneys were permitted and were required to meet FHA requirements. The use of screened porches was encouraged in warm climates. Stoops, porch decks, and steps were not to be constructed of wood. Sponsors of projects where air conditioning was proposed had to obtain prior approval from the Bureau of Yards and Docks.

6.3 DESIGN OF WHERRY, CAPEHART, AND APPROPRIATED-FUNDS HOUSING

The guidance provided by the Air Force and Navy for the design and construction of Wherry and Capehart era family housing allowed great flexibility in the implementation of the three programs.

A lack of standardized plans and a reliance on local architects resulted in a variety of floor plans, construction techniques, and materials. Locally-hired architects also imparted regional variation in the designs. Regional architectural vocabularies included stucco in the Southwest, brick in the central and southern states, and shingle wall coverings in New England. This policy contrasted with the Army's policy of relying on standardized plans and the construction of virtually identical family housing units nationwide.

The standards used for Wherry housing were similar to those developed for low-cost housing. During the 1940s, many deficiencies in the design of public housing were noted. Although some of these flaws were eliminated in Wherry housing, many of the design issues recurred in Wherry projects. Design issues included unit size, lack of storage, an open floor plan, and inadequate soundproofing.

Collectively, Air Force and Navy Wherry and Capehart era neighborhoods shared many similarities; however, comparison of individual neighborhoods illustrated differences in neighborhood and building design. Two major differences were identified between the two programs. The first was in the construction of multi-family buildings. Wherry neighborhoods for both services contained single-family, duplex, and multi-family buildings. With the construction of Capehart neighborhoods, the majority of the buildings constructed by the Air Force and the Navy were single-family and duplex units. A second difference was the incorporation of amenities, called additives, in Capehart neighborhoods. Designers of Capehart neighborhoods made every effort to upgrade family housing through the incorporation of amenities. These included garages or carports, terraces, washers and dryers, and dishwashers. The number of additives within a single Capehart neighborhood also varied. Some large Capehart neighborhoods were built as several projects with different amenities and features for each project. For example, a 700-unit project could encompass two phases, the first phase installing garages, terraces, dishwashers, or washers and dryers, and the second phase building carports and basements. The inclusion of amenities varied widely, with some family housing units receiving numerous upgrades while others had none.

The numbers of Wherry and appropriated-funds units constructed by the Navy and the Air Force were less than the numbers built under the Capehart program. The smallest number of units was constructed using appropriated funds. Many Wherry units have undergone substantial modification or were demolished. The scarcity of unaltered Wherry and appropriated-funds housing and the lack of original construction drawings make it difficult to draw conclusions about the original design or finish of these two categories of family-housing units. The conclusions presented in this section were based on the analysis of the archival record and observations made during the site visits.

6.3.1 Project Planning

Generally, the planning and implementation process for Wherry housing projects was similar for both the Air Force and the Navy. Base Commanders determined housing needs at the installation level. Major Commands then identified the installations with acute housing needs and initiated project planning that included the identification of potential sites, the adequacy of utilities, guidance on architectural treatments, and the total number of units needed. Ultimately, the law required the final plan approval of the secretary of the appropriate service.

The Air Force established a preliminary review procedure for Wherry proposals at the installation level. The Air Force base commander worked closely with an installation-level planning board. The planning board provided information on housing need and background data on the base to prospective sponsors. The Base Commander ranked proposals, offered comments, and worked closely with the successful sponsor on design issues.

After review and comment at the installation, the Base Commander forwarded the Wherry proposals to Air Force Headquarters. The Air Force Housing Evaluation Board reviewed and evaluated the proposals before making a recommendation to the Director of Installations. After all reviews, the Secretary of the Air Force issued final authorization to begin the project. Further Air Force involvement in construction of the Wherry project was limited. The Air Force relied on the construction management expertise of the U.S. Army Corps of Engineers for implementation of the plan.

Navy implementation policies paralleled the Air Force with minor variations. Wherry sponsor proposals were reviewed at the local installation. The DPWO played an influential role in the development of Wherry projects. Both the Installation Commander and DPWO reviewed and commented on proposals. The DPWO also acted as liaison between the FHA, the sponsor, and the installation. After installation review, proposals were forwarded to the Title VIII Housing Board of the Bureau of Yards and Docks and the FHA, which made final recommendations. The Housing Board selected the sponsor. The activity Commanding Officer, in consultation with the FHA, selected the site.

Procedures for developing Air Force and Navy Capehart projects were similar to those implemented under the Wherry program. Both services relied on private-sector architecture and engineering firms to design Capehart housing. Neither service relied on standardized plans. While the Air Force relied on local architecture and engineering firms to develop drawings, the Navy relied on architecture and engineering firms from outside the local region.

Both services sought to provide as many amenities, such as carports, washers and dryers, and higher-quality materials as possible, within the cost limitations imposed by Congress. In addition, the Air Force and Navy preferred single-family and duplex units to multi-family rowhouses. Multi-family units were to be constructed only in those circumstances that precluded their construction due to high costs or site constraints.

The identification of Wherry contractors and architects was challenging, as the archival record generally documented the company created to construct, manage, and operate the Wherry units rather than the contractor and architect. The Wherry architect might or might not have been associated with, and hired by, the Wherry sponsor. For the Capehart project, the contractor who built the units generally was identified as the sponsor. Large regional construction companies, including Del E. Webb and D & L Construction Company, bid on multiple Capehart projects, as did smaller local and regional companies. Similarly, one architecture and engineering firm might have designed a number of projects in a state or region for both the Air Force and the Navy.

Considerably less is documented about the contracting procedures for the construction of appropriated-funds housing. This lack of information could be the result of the Navy and Air Force focus on constructing Capehart housing during this period, or the low number of appropriated-funds housing units constructed. Although detailed information on administrative procedures was not documented, both the Air Force and the Navy encouraged the use of previously developed plans and construction specifications for appropriated-funds housing. At Mountain Home AFB, Idaho, for example, the same architect designed both Capehart and appropriated-funds housing. In general, appropriated-funds housing was constructed for personnel of higher ranks, and was similar in size and detailing to comparable Capehart housing (Figure 14).

In some cases, such as the Coral Sea Cove and Bard Estates neighborhoods at NBVC, California, Navy projects initiated as Capehart projects ultimately were constructed with appropriated funds. This appropriated-funds housing originally began as a Capehart project. Designs for Capehart

housing were completed in 1961 and noted that the drawings covered both Point Mugu and Port Hueneme under a single project number (Public Works Department, Point Mugu, NBVC 1961). Units at both installations rigidly followed the plans; however, it was apparent that the Capehart project at Port Hueneme did not materialize, as the real property records and housing directories clearly identified the housing as constructed with appropriated funds. The designs of the neighborhoods and the buildings were nearly identical, with minor differences in materials and landscaping (Figure 15 and Figure 16).

6.3.2 Building Types

Single-family, duplex, and multi-family units were constructed in both Wherry and Capehart era neighborhoods. The variety of building types also included one- and two-story buildings. Some buildings included basements and attics. Dwelling units constructed during the Wherry era ranged in size between one and three bedrooms. Capehart era family housing units included more four-bedroom units and eliminated one-bedroom units. Although multi-family units were constructed under the Capehart program for both the Navy and the Air Force, the Navy discouraged the construction of such units because of problems encountered with multi-family units constructed under the Wherry program. Of the approximately 128 Air Force bases with Capehart housing, at least 23 installations constructed multi-family buildings, representing 18 per cent of the total number of Air Force bases with Capehart units (Progress Reports, Capehart Housing).

6.3.3 Site Plan, Neighborhood Design, and Landscaping

6.3.3.1 Site Plan and Neighborhood Design

The suburban neighborhood provided the model for the design of Wherry and Capehart era neighborhoods. Design features found in civilian neighborhoods, such as wide curvilinear streets, large front lawns, long blocks, and three-way intersections, were incorporated into the design of Air Force and Navy Wherry and Capehart era family housing neighborhoods. Sidewalks were found on one or both sides of the street. Most prevalent in Wherry neighborhoods, sidewalks led from the street to the dwelling entrance and connected the rears of the units to buildings in the interior of blocks. While Capehart neighborhoods continued to feature sidewalks connecting the entry of the building with the street, the inclusion in many designs of driveways leading to garages or carports allowed for the elimination of this feature. Short sidewalks connected the driveway and the front door.

The neighborhoods were located away from the administrative and industrial areas of the base. Some neighborhoods were located off-base because of on-base spatial constraints, which could be acute in urban areas. Neighborhoods generally were uniform, with differences expressed through the use of a variety of building materials and differing footprints. Regular setbacks were common; however, building orientation could vary.

All construction at Air Force bases complied with the base master plan, which segregated construction by use. On-base family housing was restricted to one area of an installation, generally as far away from the flightline as possible. Yet, the housing needed to be located near existing utilities, and key personnel still needed quick access to the flightline in order to fulfill mission responsibilities. Even though the neighborhoods adjoined or abutted one another, vehicular access generally was not possible between the neighborhoods (Figure 17). This design feature was present regardless of the rank of the occupants of the adjoining neighborhoods.

Figure 15: Building 1067, Guam Drive, Bard Estates Neighborhood (appropriated-funds housing), Port Hueneme, NBVC, California, 2005. (Photo taken by RCG&A)

Figure 16: Building 1843, Tartar Drive, San Miguel Neighborhood (Capehart housing), Point Mugu, NBVC, California, 2005. (Photo taken by RCG&A)

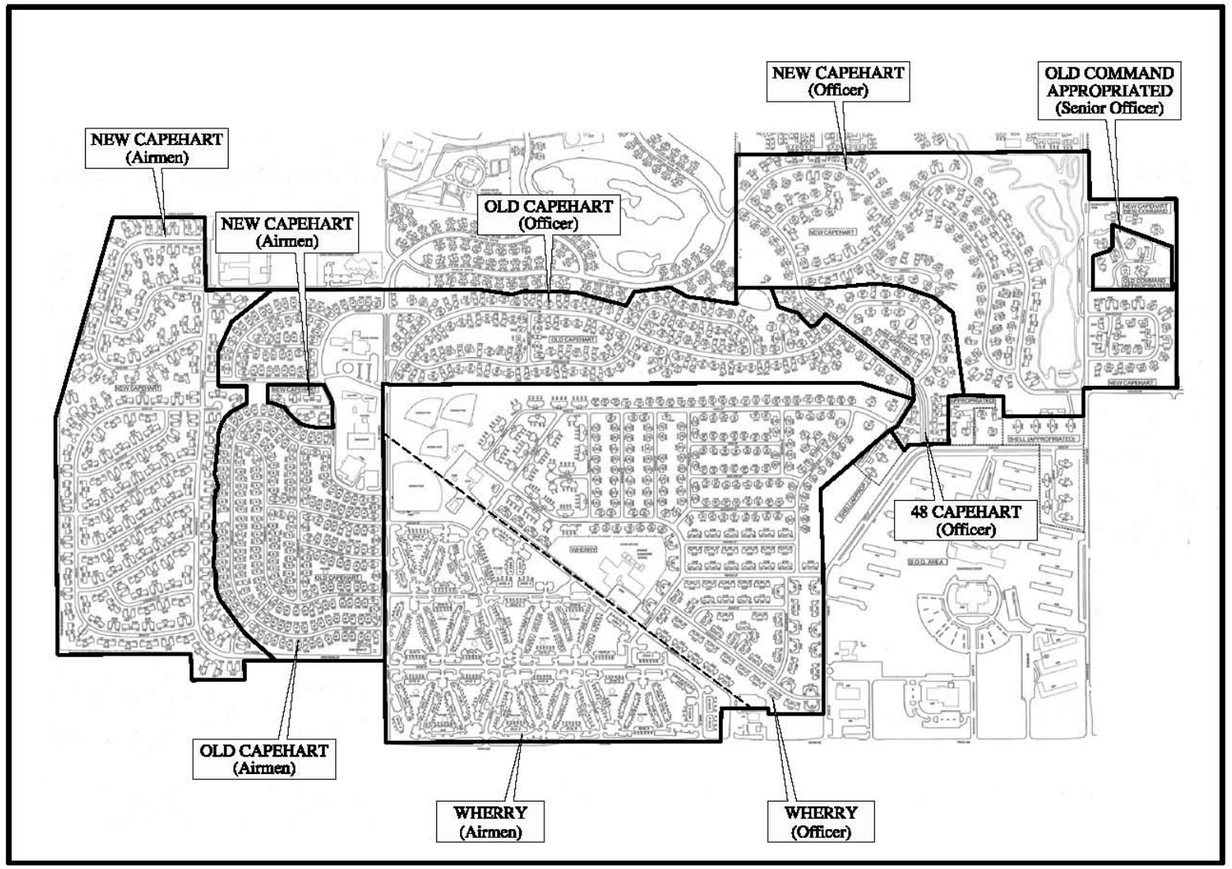


Figure 17. Overall plan of housing areas, Travis AFB, California, ca. 1998. (Courtesy of Travis AFB, 60th Civil Engineer Squardron)

The design of Navy activities was more complex because of factors affecting Navy bases that were not applicable to Air Force installations. These factors included the location and type of Navy activity. Older Navy installations, such as shipyards, were built in established urban areas, including Philadelphia, Pennsylvania; Brooklyn, New York; Boston, Massachusetts; Washington, D.C.; and, San Diego, California. These locations had less land available for expansion when it became necessary, particularly during World War II and the postwar period. The housing areas were located generally on the periphery of the industrial areas or off-base. Naval air stations had more land, but many of the same types of locational factors affecting the Air Force were shared by the air station, namely, the location of the flightline. As with Air Force installations, housing areas at Naval air stations were located at the periphery of the base.

Air Force Wherry and Capehart neighborhoods incorporated few cross-streets and moderately curving roads. Cul-de-sacs were more common in Capehart neighborhoods than in neighborhoods constructed during the Wherry era. Air Force Wherry and Capehart neighborhoods were more regimented and regular, such as those found at Mountain Home AFB and the Catalina Heights neighborhood at NBVC, which originally was constructed for the Air Force. The buildings tended to be sited parallel to the street with little variety in building orientation or setback.

The provision of parking shelters varied between the Capehart and Wherry programs and among individual Air Force installations. In some cases, the rank of the occupant determined whether parking shelters were provided. At some installations, all housing units were provided parking shelters, regardless of the occupant's rank or building type (i.e., single-family, duplex, or multi-family). Wherry neighborhoods with multi-family units at Mountain Home AFB had multi-car garages grouped together (Figure 18). Variety in the provision of parking shelters was illustrated by the design of single-family Wherry officer housing with attached garages at Travis AFB, California. Air Force Capehart neighborhoods displayed the same variety in the provisions for parking shelters. Non-commissioned officer and officer housing had carports at some installations, such as the former Oxnard AFB Capehart housing area at NBVC. Parking for enlisted personnel multi-family units at this installation was provided through an off-street parking pad (Figure 19).

The Navy expressed a preference for curvilinear streets in both Wherry and Capehart neighborhoods. The Bruns Park Wherry neighborhood had a circular median (Figure 20). Sidewalks typically were located on both sides of the street in Wherry neighborhoods, but on one side of the street in Capehart neighborhoods. Parking varied, from on-street parking and interior parking areas to carports and garages. Some multi-family Wherry neighborhoods had multi-unit carports clustered together that served a particular dwelling unit in a particular area. Wherry neighborhoods for senior officers had free-standing parking shelters centered between pairs of single-family detached units. The parking shelters shared a driveway. The archival record was unclear as to whether the parking shelters originally were carports that were enclosed to create garages or originally were constructed as enclosed garages.

6.3.3.2 Landscaping

Landscaping was considered an additive item. In general, the Air Force and the Navy preferred to forgo landscaping in exchange for larger units and more building amenities, which the services felt would improve the livability of the units (Lovelace 1960:2). As a result, few Wherry or Capehart era neighborhoods were extensively landscaped. Although the 1959 Navy design manual recommended the retention of existing plant material to the maximum extent possible, there was no guidance on the installation of new plantings. Some installations, however, hired professional

Figure 18: Multi-car parking garages (Wherry neighborhood), Mountain Home AFB, Idaho, ca. 1956. (Courtesy of Cultural Resources Manager, Mountain Home AFB)

Figure 19: Parking area at Catalina Heights (Capehart housing), NBVC, California, 2005. (Photo taken by RCG&A)

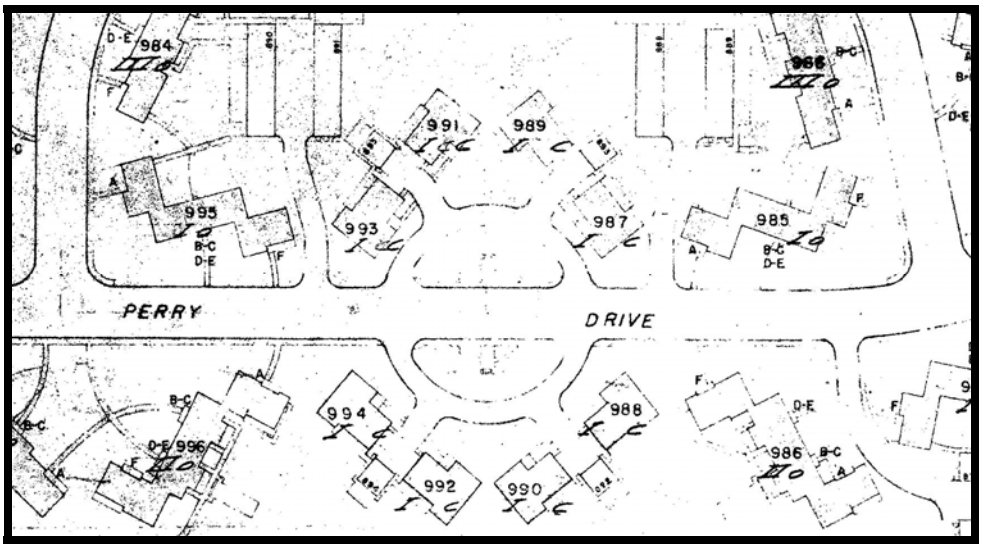


Figure 20: Detail of Site Plan of Bruns Park (Wherry housing), NBVC, California. (Courtesy of Public Works Department, Port Hueneme)

landscape architects. The decision to hire a landscape architect for a project was likely dependent on the overall project cost. If the bids were low enough to incorporate professional landscaping, then trees, bushes, and foundation plantings were provided. Otherwise, grass composed the only landscape element. Landscaping was minimal, such as at Kaneohe Bay, Hawaii. Yards were seeded but other plantings were omitted. Residents later installed trees and shrubs, with mixed results.

Landscape architects were hired as part of the design team for some projects. Both the Wherry and Capehart neighborhoods at Mountain Home AFB and Travis AFB had professionally designed landscape plans (Figure 21). The landscape plans included perimeter and foundation plantings, yard trees, and accent shrubbery. Street trees also could be incorporated into the overall scheme. Landscape designers sometimes introduced plant materials that were aesthetically pleasing but unsuitable for local climates, such as trees and expansive lawns in the high desert climate at Mountain Home AFB. Even though landscape plans were developed, they were not always implemented. The landscape plan for the Travis AFB new Capehart neighborhoods, for example, never was implemented. In some cases, the archival record was unclear as to whether what was planned actually was planted, or if the current plant materials were replacements.

At some Air Force installations, landscaping was not a part of the Capehart project, and the responsibility for developing a landscape plan fell to the base. The base engineering personnel at Dover AFB, for example, prepared a master landscaping plan for the Capehart neighborhood (Dover AFB 1960). The plan highlighted areas where residents could plant their own flowers and vegetables. Exceptions to the master plan were permitted, which enabled tenants to plant small trees and shrubs in locations of their own choosing (Dover AFB 1960). All exceptions to the master plan needed prior approval from the Base Engineering Office (Dover AFB 1960). Capehart residents at Dover AFB needed to request grass seed, fertilizer, and peat moss to "develop the grounds," suggesting that the neighborhoods did not have grass when completed (Dover AFB 1960).

The Navy also prepared landscape plans for some of its installations. The landscaping at the Wherry neighborhood at NSA Mid-South, Tennessee, was professionally designed. Landscaping

included foundation shrubs and trees. The neighborhood activity retained many mature trees that represented early landscaping efforts.

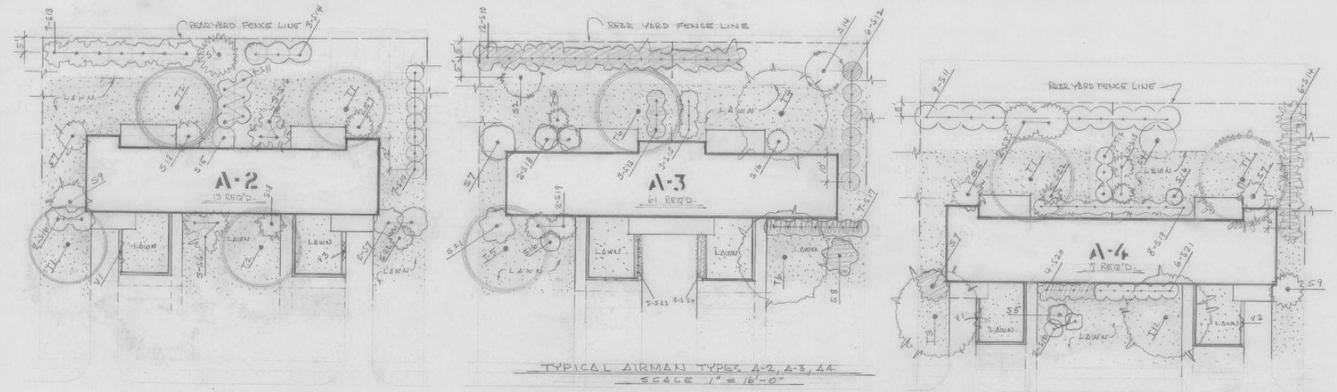
Fencing at Wherry and Capehart neighborhoods generally were limited to chain-link perimeter fencing. Individual enclosure of yards was rare, and if completed, also was chain-link. Privacy screens were more common, and were installed between duplex units or to partially shield a patio or the façade windows. At some installations, residents were permitted to install additional fencing. Dover AFB allowed the installation of privacy fences. Residents had to pay for the installation, and only a single type of fence was permitted. Prior approval of the housing office was required for the installation. When the resident left the Capehart housing, the fence became government property. In some cases, fences were installed without authorization. Non-compliant fences remained in place until the occupant responsible for the installation left the Capehart housing, and then was removed (Dover AFB 1960).

At the time of the site visits in fall 2005, playgrounds were located within some Air Force and Navy Wherry and Capehart era neighborhoods; however, the archival record was unclear as to whether the playgrounds were constructed when the neighborhoods were built or if they were constructed at later dates. Conclusions about the provision of playgrounds were difficult to draw. Based on observations made during the site visits, each installation decided whether to include playgrounds. Tot lots, defined as a play area with minimal equipment, sometimes were originally planned for Wherry neighborhoods, such as those neighborhoods located at Mountain Home AFB and NSA Mid-South. No original tot lots appeared to survive. Some neighborhoods, such as the Wherry neighborhood at Mountain Home AFB, also had playgrounds in addition to tot lots. These playgrounds included more extensive recreational facilities such as baseball diamonds. It appeared that playgrounds and/or tot lots also were designed for Capehart neighborhoods. Currently, some neighborhoods had play facilities, but they all appeared to be later constructions, as did the athletic fields and recreational facilities, such as community centers and swimming pools, found adjacent to the housing areas.

6.3.4 Exterior Design

Although design differences existed between Wherry and Capehart era housing, the buildings reflected common principles and use of materials. Designers drew from an extensive palette of materials in the construction of both types of housing. The exteriors of housing incorporated a variety of materials. Material choices ranged from traditional materials such as brick, wood, and stucco, to new materials including flexboard (an asbestos material), plastic-coated plywood, T1-11, and asbestos shingles. A number of different roof types also were found on Wherry and Capehart era housing. Flat, gable, and hipped roofs were common. Roofing materials included composition shingles and built-up gravel. Every window type then available was used on Wherry and Capehart era housing. Aluminum-frame sliding and casement windows, double-hung wood windows, jalousie, and hopper and awning windows were installed. Although a number of different window types were used, the Air Force and Navy appeared to prefer aluminum sliding and casement windows.

To create visual interest along the street, the Air Force and particularly the Navy Capehart neighborhoods combined a variety of materials on building exteriors. Sections of building exteriors were completed in stone or brick veneer, vertical board siding, weatherboard, and textured plywood panels. These materials were used in a variety of proportions and combinations. The Air Force did not offer as broad a combination of exterior materials per building as the Navy. There was less variety in proportional use of materials; in general, a stucco building, for example, would not incorporate other building materials. The Air Force rarely incorporated more than three exterior materials on the same building, and those building materials were repeated throughout the neighborhood.

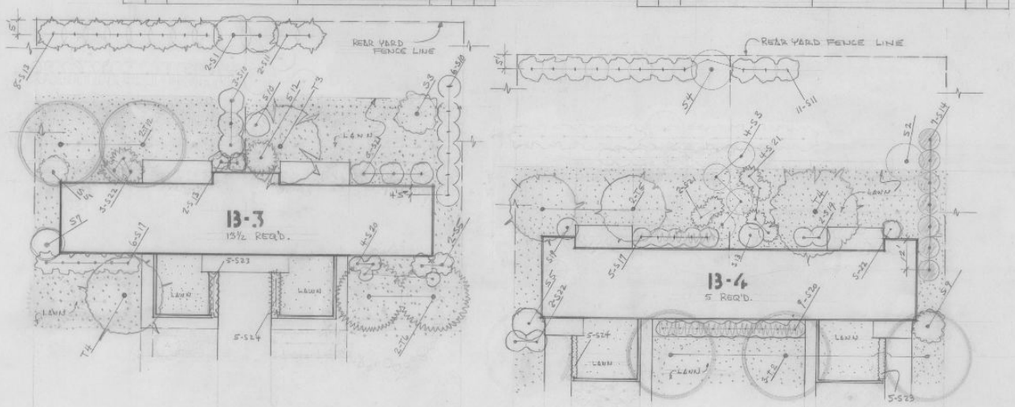


TYPICAL AIRMAN TYPES A-2, A-3, A-4
SCALE 1" = 16'-0"

KEY	QUAN	BOTANICAL NAME	COMMON NAME	SIZE	CAL	COND
		TREES:				
T1	75	MORUS ALBA	MULBERRY	6-8'	1½"	B/E
T2	136	FRAXINUS ACUMINATA	EUROPEAN ASH/MOIRE	4-6'	1½"	B/E
T3	28	ROBINIA PSEUDO-ACACIA	BLACK LOCUST	6-8'	1½"	B/E
T4	134	GLEDITSIA TRIACANTHOS VAR.	HONEY LOCUST	8-10'	1½"	B/E
T5	126	ULMUS PUMILA	CHINESE ELM	6-8'	1½"	B/E
T6	230	LIQUIDAMBER STYRACIFLUA	LIQUIDAMBER	5-6'	1½"	B/E
T7	15	POPULUS SIMONII	SIMONS POPLAR	4-5'	1"	B/E
T8	7	POPULUS NIGRA ITALICA	ITALIAN POPLAR	8-10	1½"	B/E
T9	90	BETULA ALBA	WHITE BIRCH	8-10'	1½"	B/E
T12	39	PINUS NIGRA	BLACK PINE	2-3'	1"	B/E

KEY	QUAN	BOTANICAL NAME	COMMON NAME	SIZE	CAL	COND
		VINES:				
V1	22	AMPELOPSIS TRICUSPIDATA	BOSTON IVY	2YR.		B/E
V2	8	POLYGONUM AUBERTI	SILVER LACE VINE	2YR.		B/E
V3	14	EUONYMUS RADICANS	WINTER CREEPER	2YR.		B/E
		LAWN AS PER PLAN (SEE SPECIFICATIONS)				

KEY	QUAN	BOTANICAL NAME	COMMON NAME	SIZE	CAL.	COND
		SHRUBS:				
S1	73	MALUS BECHTEL	BECHTEL CRAB	8-9'		B/E
S2	141	PRUNUS CISTENA	PURPLE LEAFED SAND CHERRY	3-5'		B/E
S3	63	CHAENOMELES LAGENARIA	JAPANESE QUINCE	18-24		B/E
S4	112	PRUNUS PERSICA	FLOWERING PEACH	3-4'		B/E
S5	71	COTONEASTER PARNEYI	BRIGHTBEAD COTONEASTER	15-18		B/E
S6	39	JUNIPERUS CHI. KETELEERI	KETELEERI JUNIPER	15-18		B/E
S7	227	SPIRAEA VAN HOUTTE	BRIDALWREATH	8-10		B/E
S8	61	PINUS MUGHUS	MUGHO PINE	6-12"		B/E
S9	24	THUJA AUREA NANA	BERCKMAN'S ARBORVITAE	12-15		B/E
S10	1164	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAFED V.B.	18-24		B/E
S11	558	RHUS TYPHINA	COMMON STAGHORN SUMAC	2-3		B/E
S12	451	DEUTZIA SCABRA PLE.	PRIDE OF ROCHESTER D.	2-3'		B/E
S13	740	SYRINGA CHINENSIS	CHINESE LILAC	2-3'		B/E
S14	376	PYRACANTHA COCCINEA L.	LALAND FIRETHORN	12-15'		B/E
S15	289	LIGUSTRUM OVALIFOLIUM AUR.	GOLDEN CALIF. PRIVET	18-24'		B/E
S16	293	BERBERIS THUNBERGII	JAPANESE BARBERRY	12-15		B/E
S17	342	BUDDLEIA DAVIDII	ORANGE EYE BUDDLEIA	2YR.		B/E
S18	301	EUONYMUS KRAUTSCHOVICA	SPREADING EUONYMUS	12-15		B/E
S19	234	LIGUSTRUM OBTUS. C.V.	GOLDEN VICARI PRIVET	18-24'		B/E
S20	239	MAHONIA AQUIFOLIUM	OREGON GRAPE	12-15		B/E
S21	191	VIBURNUM OPULUS NANA	DWARF CRANBERRY	15-18		B/E
S22	324	JUNIPERUS PFITZERIANA	PFITZER JUNIPER	12-15		B/E
S23	572	MAHONIA AQUIFOLIUM COM.	COMPACT OREGON GRAPE	15-18		B/E
S24	339	HYPERICUM "SONGOLD"	SONGOLD HYPERICUM	18-24		B/E



TYPICAL MAJOR AND COL. TYPES B-3, B-4
SCALE 1" = 16'-0"

TREES INDICATED IN THIS PLAN, WHERE OCCURING UNDER ELECT. POWER LINES, SHALL BE RELOCATED TO A MIN. OF 10'-0" OUT FROM UNDER ELECT. WIRES.

CERTIFIED AS BUILT DRAWING:
HUMMEL, HUMMEL & JONES AND NEUTRA & ALEXANDER
BY: _____ 10 APRIL 1960

REVISION NO.	DATE	DESCRIPTION	INITIAL

HUMMEL, HUMMEL & JONES
R. J. NEUTRA & R. E. ALEXANDER
ARCHITECTS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
DIRECTORATE OF FACILITIES SUPPORT
FAMILY HOUSING DIVISION AFCIE-H
WASHINGTON 25, D. C.

DESIGNED B.B.
DRAWN CHT BB
CHECKED RE
SUBMITTED
A.F. DWG. NO. L-3

270 UNIT ARMED SERVICES HOUSING PROJECT FOR MOUNTAIN HOME AFB, IDAHO

TYPICAL LANDSCAPING
'A' UNITS & 'B' UNITS

BALDWIN, ERIKSSON AND PETERS
LANDSCAPE ARCHITECTS · PLANNING CONSULTANTS
8523 BEVERLY BLVD. LOS ANGELES 48 OL 2-2219

REVISIONS AND APPROVAL RECOMMENDED
Robert F. Baldwin
DATE 15 April 58
APPROVED
Robert F. Welch
DATE 15 April 58

A/F PROJECT NO. 106
FHA PROJECT NO. 124-61001-AIE & 124-61001-AIE 2
DATE 4-14-58
A/F DWG. NO.
SHEET NO. 34 OF 70

Figure 21. Landscape plan of Old Capehart officer neighborhood, Mountain Home AFB, Idaho. (Courtesy of Mountain Home AFB, 366th Civil Engineer Squadron)

Carports and garages were included with some of the buildings. Attached carports or garages often separated the two-single family units of a duplex. In fact, Navy design guidelines encouraged centering parking shelters between semi-detached dwelling units (Bureau of Yards and Docks 1959:5). In many cases, the garage roofs are integrated into the buildings' overall roof form (Figure 22). In other cases, carport roofs were flat and the roof of the living unit was pitched. At Naval activities, parking shelters could be attached to the buildings in a variety of configurations (Figure 23).

Extensive exterior ornamentation was not present on the majority of Wherry or Capehart era housing. Stylistic attributes were lent through scale, form, and mass rather than applied detailing such as cornices with dentils, Classical columns, and scrollwork. Although the buildings, in many cases, were similar in design, they used regional materials. Stucco was used in Florida and the Southwest, cedar shakes in New England, brick in the central and southern states, and wood siding in the Northwest.

The design of Wherry housing made a nod towards more traditional architectural styles. However, by the time the Capehart legislation was enacted, the architectural vocabulary had changed. The ranch style became popular for a number of reasons. Architects and builders promoted the ranch style because the style was seen as promoting healthy, outdoor living centered around the private backyard (USAEC 2003:5-28). The low-cost of construction associated with the ranch style and their easy adaptability to the duplex form made the style popular among architects designing Capehart housing. In addition, the style was popular in the civilian market, where it was seen as "contemporary." The minimalist design was easy and inexpensive, and lent itself to modern building materials and construction techniques employed in the construction of Capehart housing (USAEC 2003:5-28).

Figure 22: Building 1901, East Sparrow Drive, San Miguel (Capehart housing), Point Mugu, NBVC, California, 2005. (Photo taken by RCG&A)

Although the ranch style was popular in the design of Capehart housing, some neighborhoods were completed in more traditional architectural styles. Some Wherry and Capehart neighborhoods in New England were designed in the Cape Cod style (Keyes, Lethbridge & Condon 1959) (Figure 24). A Capehart project constructed at McGuire AFB, New Jersey, was completed in a "semi-colonial design" with brick veneer and wood with porticos and shutters (Goddard 1959:1, 3). The International Style was used at Mountain Home AFB for houses designed by the noted architecture firm of Neutra and Alexander (Figure 25 and Figure 26).

Some of the Air Force's and Navy's Capehart projects were recognized for their design. The Capehart project at Naval Station San Diego, California, was recognized by the Navy as "one of the most outstanding of any Military [sic] housing project" because the project contained all single-family units, the maximum amount of space and livability, and "many delux [sic] features, individual fenced yards, etc." (Koski 1961:1). The Capehart project at Naval Training Center, Great Lakes, Illinois, received a merit award from the FHA in 1964. In a letter to the Secretary of the Air Force Eugene Zuckert, the National Association of Home Builders praised the Air Force for the design of its Capehart housing and its use of new materials and construction methods (Buchanan 1961:1).

6.3.5 Interior Design

Generally, the Wherry units were smaller than their Capehart counterparts. The units lacked sufficient living and storage space, problems that were later corrected under the Capehart program. Installations requesting Capehart housing were required to acquire their Wherry units. Congress appropriated funds so that the Wherry units could be upgraded to current military standards for family housing. Funds were used to construct additional bedrooms, combine units, and add storage.

The floor plan for Wherry units generally consisted of a combined living/dining area, with the main entrance opening directly onto the living room. Kitchens generally were located in the rears of the units. Open floor plans in some Wherry units extended into the kitchen and dining area. A short hall provided access to the bedrooms and the bathroom. Many of the units were constructed as either one-, two-, or three-bedroom units; four-bedroom units were rare. No Wherry units originally were constructed with more than one bathroom. Storage was limited, although there were exceptions, such as the Wherry projects at NSA Mid-South and at Mountain Home AFB. Small bedroom closets, linen closets, and coat closets were provided, but additional storage space was not included.

Capehart projects attempted to address the shortcomings of the Wherry design, namely the lack of storage and the limited number of bedrooms. Small entry halls were included in the units. In the Capehart units, the kitchen was enclosed from the dining area and connected through the use of pocket doors. The Air Force considered combination dining and kitchen areas undesirable features (U.S. Air Force n.d.b.:2). Capehart housing generally had increases in the number and size of bedrooms, the number and size of closets, and the number of bathrooms. A main bathroom was located in the hall, and a second bathroom sometimes was located in the master bedroom. In two-story units, a half bath was located on the first floor and the full bath was located on the second floor (Figure 27). The second bathroom could be a half-bath or a bath with shower. In addition to coat, linen, and bedroom closets, storage rooms and closets were included with the units (Figure 28).

Additional storage often was provided in garages, within the carport, or in free-standing buildings in the rear years. Many installations had multiple Capehart projects over the term of the program. As time progressed, the amount of storage provided increased. Early Capehart projects, while having more storage than Wherry units, had limited space. Later Capehart projects increased storage space with both interior and exterior areas, such as at Travis AFB.

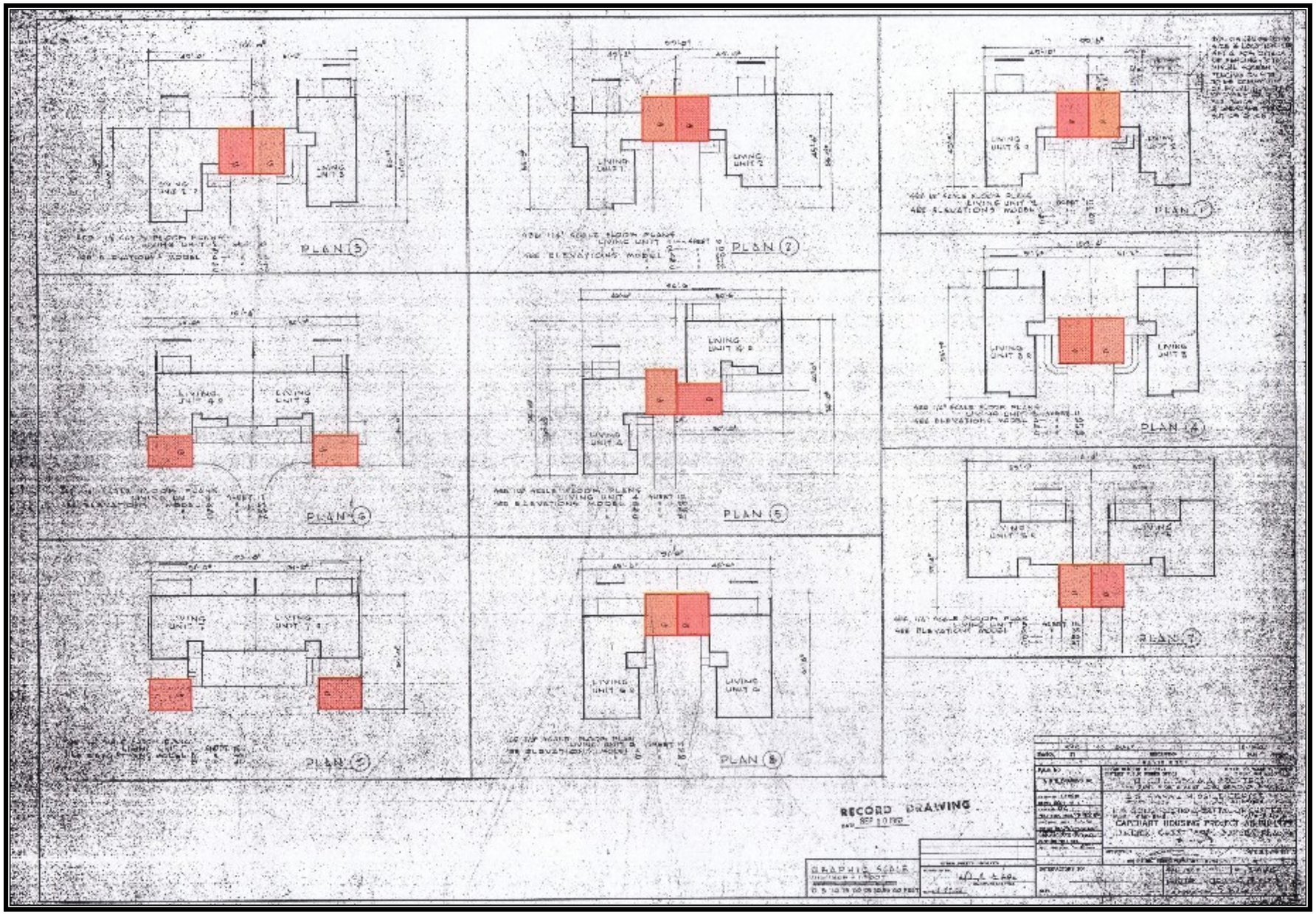


Figure 23. Duplex plans showing variety in garage locations, San Miguel (Capehart housing), Point Mugu, and Coral Seas and Bard Estates (appropriated- funds housing), Port Hueneme, NBVC, California. (Courtesy of Department of Public Works, Point Mugu)

Figure 24: 13D Young Street, (Wherry housing), Westover AFB, Massachusetts, 1956. (Courtesy of the Thompson family)

Figure 25: Senior Officer quarters (Wherry housing), Mountain Home AFB, Idaho, ca. 1956. (Courtesy of Cultural Resources Manager, Mountain Home AFB)

Figure 26: 4478 Tuck Street front elevation, (Colonel, Old Capehart housing), Mountain Home AFB, Idaho, 2005. (Courtesy of Mountain Home AFB, 366th Civil Engineer Squadron)

Various materials were used for the interiors. Plaster, more commonly used in Wherry housing, and drywall were common interior wall surfaces. Flooring materials consisted of hardwood, wood block, asphalt tiles, vinyl sheet flooring, and terrazzo. Bathrooms typically had ceramic tile. In general, interior ornamentation was austere. Trim was limited to wood baseboards and window and door casings. Some housing units included upgraded finishes such as the mahogany paneling found in the Capehart enlisted and officer housing at NBVC.

The Air Force and the Navy included amenities, or additives, to the units to increase livability. Additives included not only upgrades in materials but the inclusion of appliances and luxuries that were beyond the base unit. The decision to include amenities was based on the overall project cost, the location of the project, and the service constructing the housing. Some Capehart senior officer housing included fireplaces, while other units had glass tub and shower enclosures. These features were found in the Capehart housing constructed for the Navy at NBVC. Kitchen additives included disposals. The archival record suggests that some Wherry projects originally included washing machines and outdoor clotheslines. Capehart projects included either washers and dryers or hook-ups for washers and dryers. The location of the laundry equipment was either in the kitchen or in a small utility area off of the kitchen.

Some Navy projects, such as the one for the Naval Radio Station, Winter Harbor, Maine, included basements. Navy staff recognized the project, the units of which were described as "modified Cape Cods," as blending well into the community, and providing ample space in the bedrooms and plenty of storage (Capehart Housing, NRS Winter Harbor 1958:1; Musband 1959:1). High quality materials and construction were noted by the Navy and the FHA field office (Capehart Housing, NRS Winter Harbor 1958:1).

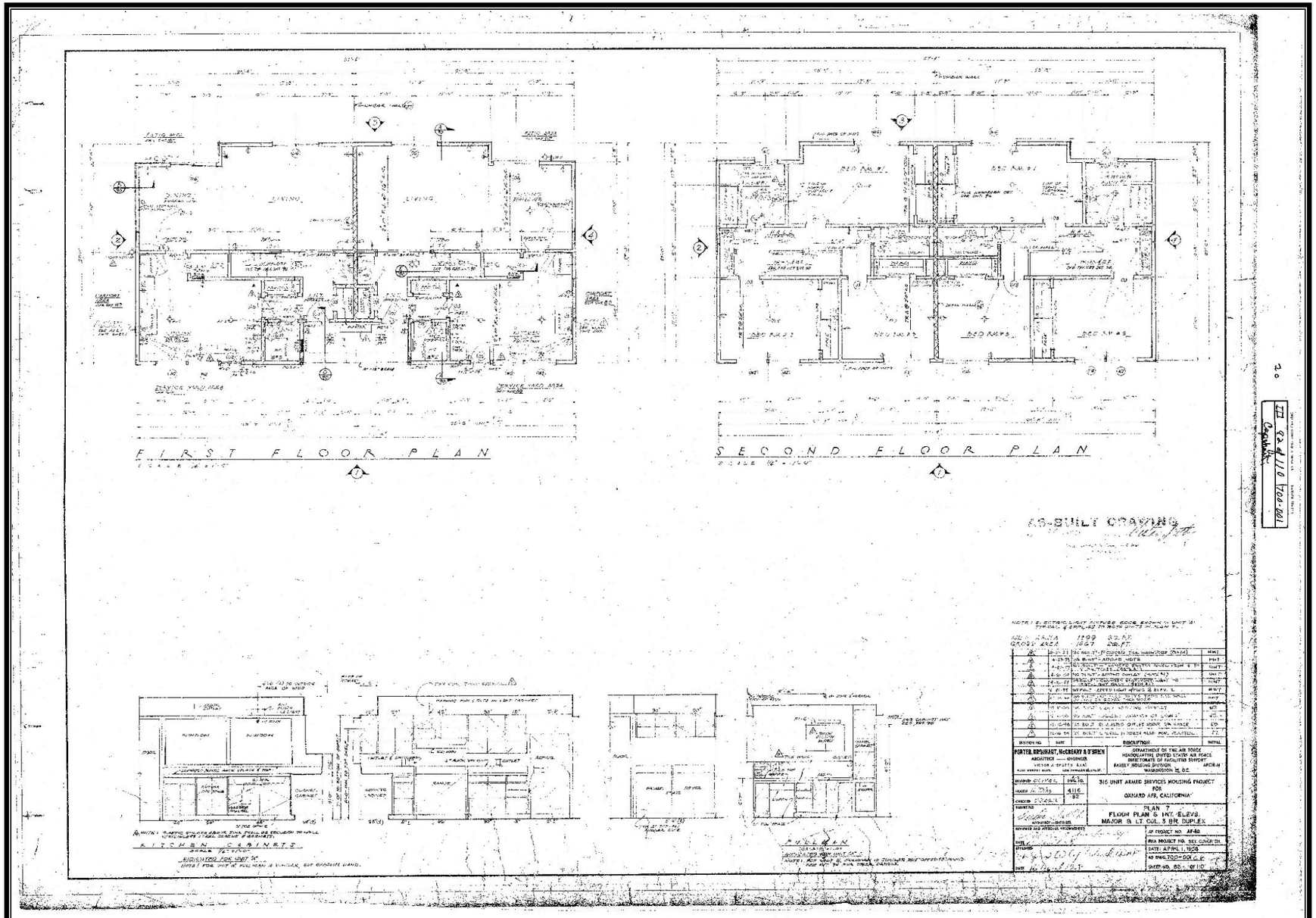


Figure 27. Floor plan 7, two-story multi-family units, Catalina Heights (Capehart housing), Camarillo, NBVC, California. (Courtesy of Department of Public Works, Point Mugu)

Figure 28: Storage closet at 103 Armstrong (new Capehart housing), Travis AFB, California, 2005. (Photo taken by RCG&A)

6.3.6 Site Variables

The case studies and the archival record suggested that the Air Force and Navy Wherry and Capehart era housing reflected regional stylistic differences, although the majority of the housing was constructed in the vernacular ranch style that was popular during the period. The relative diversity in regional styles could be attributed to the fact that the Air Force and Navy did not develop standardized drawings for its Wherry and Capehart era family housing. The lack of standardized drawings enabled architects to take advantage of regional design and construction practices and afforded architects a certain degree of flexibility when designing the housing.

Both the Navy and the Air Force built units to the maximum allowable mortgage limit. In areas with lower construction costs, this allowed for the incorporation of more amenities. Areas with higher costs produced units with basic necessities. Although the Navy constructed smaller Wherry units costing well under the mortgage limit, the Navy appeared to take full advantage of mortgage limits when implementing the Capehart program. The Navy generally included high-quality materials, such as the use of mahogany paneling at NBVC, included washers and dryers when economically feasible and hook-ups when the actual appliances could not be installed due to cost, and severely limited the number of multi-family units constructed. The quality of Navy projects was recognized by builders organizations involved in the civilian housing market.

The archival record suggested that the Air Force family housing program implemented a generally high quality of family housing and offered a number of amenities. The Air Force Wherry units were the largest of those constructed for the three services, and cost the most to construct. Like

the Navy, the Air Force restricted the number of multi-family units and included a number of amenities in its Capehart projects. Generally, the Air Force attempted to provide washers and dryers in as many units as possible, provided disposals and in some cases dishwashers, constructed garages and carports, and included attics, basements, and screened porches based on regional customs.

6.3.7 New Materials

The postwar housing boom introduced a number of new products to the civilian housing market. Changing construction techniques, such as the use of assembly-line construction and modular measure, enabled the rapid construction of large numbers of housing units. These factors enabled the Air Force and the Navy to construct housing under severe cost constraints that was compatible with civilian market housing.

The postwar period saw a decrease in the use of traditional exterior building materials. Brick and wood were replaced by brick veneer, various forms of plywood, and asbestos. Wood windows decreased in popularity as lower-maintenance aluminum sliding and casement windows were increasingly used. Built-up gravel and asphalt, composition, and asbestos shingles were used for roofing materials rather than the traditional wood shingles, metal, or slate.

An increase in the use of non-traditional interior building materials also occurred during the time period. Although plaster was used in Wherry projects and some Capehart projects, drywall increasingly was installed. The Air Force, however, considered gypsum board an undesirable material because it was damaged easily. The appropriated-funds project at Naval Station, Key West, Florida, called for plaster and Keene's cement (a hard white finishing cement with a fast setting time and a high polish capability that consists of anhydrous gypsum plaster and an accelerant) in the kitchens and bathrooms (NAVDOCKS SPECIFICATION NO. 4917/56:1-1). Hardwood and wood-block flooring was used in both Wherry and Capehart housing units. Asphalt and vinyl flooring also were used.

6.3.8 Hierarchy in Design

Both services segregated housing by rank. The separation of officer housing from enlisted housing was accomplished by locating housing areas away from each other within the base's overall family housing areas, and using streets and green space as barriers. Differences in rank also were expressed through the size of the dwelling units and the use of materials. Hierarchy in design also was based on seniority. Senior ranking enlisted personnel and senior ranking officers were entitled to more bedrooms and bathrooms. Senior ranking officers also received disposals and dishwashers in the kitchens in some cases. Rank did not preclude the construction of carports or garages. The Wherry enlisted housing at Mountain Home AFB and the Capehart enlisted housing constructed at Point Mugu and Port Hueneme (both at NBVC), for example, included carports and garages.

6.3.9 Alterations

The case studies included in this report revealed that a significant number of Wherry and Capehart family housing have undergone a high degree of alteration. These alterations were the result of maintenance issues as well as changing lifestyles. The changes that occurred can be characterized broadly as changes in unit sizes, changes to allow technology upgrades, changes to allow for the inclusion of amenities; and changes in materials for ease in maintenance. In places that experienced widespread demolition of housing, the units were demolished (1) because there was an excess of

family housing; (2) because they were to be replaced with new construction; or, (3) because the units did not meet current standards. The Air Force and Navy Wherry and Capehart era units experienced a few changes in use, with such changes noted at Mountain Home AFB and Travis AFB.

Wherry housing units typically exhibited two phases of alterations. The first phase occurred during the Wherry and Capehart era and was completed in conjunction with the Wherry acquisition process. Alterations included the combining of units to create larger quarters and the installation of additional amenities. The second phase of alterations occurred after the Wherry and Capehart era. Generally, these alterations were completed during the last quarter of the twentieth century and consisted of the complete interior and exterior renovation of the units. These renovations often comprised bedroom additions, replacement of all interior materials and windows, and upgrades to bathrooms and kitchens. In some extreme cases, all interior and exterior materials were removed, leaving only the foundations and original framing intact. This latter approach occurred at Port Hueneme NBVC, MCAS Cherry Point, Mountain Home AFB and Travis AFB (Figure 29). At Mountain Home AFB, the rear exterior walls were extended to accommodate expanded kitchens and new dining areas.

Capehart units also underwent a high degree of alteration, although exceptions exist. During the late twentieth century, alterations included the installation of new roof structuring or materials, new energy-efficient windows, new doors, new floor coverings, new kitchen cabinets and appliances, and new bathroom fixtures. Some units were razed to the structural framing, as occurred at Point Mugu (NBVC). At NSA Mid-South and MCAS Cherry Point, some units retain only their exterior brick walls; all other interior and exterior materials were replaced. The removal of most or all interior and exterior materials occurred more frequently at Naval Activities than Air Force bases.

A number of Wherry neighborhoods experienced wholesale demolition; fewer Capehart neighborhoods have been razed. Some isolated demolition of individual buildings occurred due to fire in some Capehart neighborhoods. Wholesale demolition of entire neighborhoods occurred at some neighborhoods, including the Wherry neighborhood at NSA Mid-South, the Wherry neighborhood at Mountain Home AFB, the Slocom Village Wherry neighborhood and half of the Hancock Village Wherry neighborhood at MCAS Cherry Point, and a Capehart neighborhood at Mountain Home AFB. The last remaining Wherry officer house at Travis AFB currently houses the Boy Scouts.

Figure 29: Multi-family airmen neighborhood (Wherry housing), Travis AFB, California, 1994. (Courtesy of Travis AFB, 60th Civil Engineer Squadron)

6.4 COMPARISON OF WHERRY AND CAPEHART ERA HOUSING CONSTRUCTED BY THE DEPARTMENT OF DEFENSE

The DoD-wide housing shortage in the post-World War II era affected the retention rates and morale of the entire military establishment. The flexibility in implementing the Wherry and Capehart programs allowed each service to address the family-housing shortage in a manner that best suited its particular needs. Each branch of the armed forces developed policies and procedures for implementing both housing programs in addition to housing funded through Congressional appropriations.

In general structure, the Air Force, Navy, and Army Wherry and Capehart programs were similar. Installation Commanders were closely involved with the development of projects. The Commanders quantified the housing need, provided statistics on the neighboring community and the installation, met with potential sponsors, and commented on proposals. Installation Commanders also worked closely with the Army Corps of Engineers or the Bureau of Yards of Docks in the construction management aspects of the family-housing projects. The FHA provided design and financial guidance to the services to ensure that proposals met FHA requirements. The Secretaries of the respective services ultimately determined the number of units constructed by each service and approved the sponsor.

Minor administrative differences in implementation of the Wherry and Capehart programs existed among the services. These differences were expressed in the review process along the chain of command, and in personnel authorized to approve projects during various phases of project development.

The most significant difference among the Army, Air Force, and Navy implementations of the Wherry and Capehart programs was standardization in architectural plans. The Army's adoption of standardized plans resulted in a greater degree of similarity in Army housing from region to region than is evident in the housing built by the Air Force and the Navy. Air Force and Navy Wherry and Capehart era family housing demonstrated greater variety in design and materials than did housing constructed for the Army. A secondary difference among the services was the type of housing constructed. Each service constructed a significant number of single-family and duplex units; however, the Army constructed many more multi-family units than did the Air Force and the Navy. This was particularly true under the Capehart program. Air Force and Navy policy stressed the construction of single-family and duplex units over the construction of multi-family units.

6.5 CONCLUSION

During the immediate postwar years, the Air Force and the Navy experienced a severe shortage of family housing. The shortage of housing and the poor quality of existing family housing affected morale and retention rates. In order to address these issues, the Air Force and the Navy constructed family housing that was comparable with that found in the civilian market. Wherry and Capehart housing was subject to FHA regulations because the FHA insured the mortgages. Consequently, the two services were able to address the family housing need by relying on the private sector to design and build housing units. The Air Force and Navy did not use standardized plans in the design of their Wherry and Capehart era family housing. This resulted in a certain degree of variety in terms of style, materials, and amenities. In this manner, the Air Force and the Navy were able to address the unique needs of particular installations.

7.0 SUMMARY AND RECOMMENDATIONS FOR PROPERTIES OF PARTICULAR IMPORTANCE

7.1 PROJECT OVERVIEW

7.1.1 Objectives of Study

This historic context was prepared to support the Departments of the Air Force and the Navy in the execution of the *Program Comment for Capehart and Wherry Era Housing at Air Force and Navy Bases,* published by the Advisory Council on Historic Preservation (Advisory Council) on 18 November 2004. The current study supplements an earlier investigation, *Housing an Army: the Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)*, prepared for the United States Army Environmental Center (USAEC) and expands upon this earlier Army work to present data on the Air Force and the Navy housing programs.

Similar in scope to the earlier Army study, the current investigation develops an historic context for Air Force and Navy housing of the era. The report includes discussions on the broad social history of housing in the post-World War II United States, post-World War II Air Force and Navy policies and demographics, the legislative history of the Wherry and Capehart Acts, and the associated military housing programs.

The historic context provides a theoretical framework for understanding Air Force and Navy housing of the period, which is organized by theme, geographic area, and chronological period. The historic context documents the Air Force's and the Navy's post-World War II family housing construction program in the United States, including the 48 contiguous states, Hawaii, and Alaska. Three major historic sub-themes were developed:

> (1) Military history focusing on the influence of Cold War policies upon Air Force and Navy organizational structures and demographics;
>
> (2) Social history and the relationship of the broad trends of post-World War II U.S. housing upon Wherry and Capehart era housing; and,
>
> (3) Architecture and the construction of large-scale military housing projects during the Wherry and Capehart era, including the role of prominent architects and builders.

7.1.1.1 Program Comment

The Air Force and the Navy utilized the provisions for Program Comments contained in 36 CFR 800.14(e) of the Advisory Council regulations to take into account the effects of management activities upon Wherry and Capehart era housing that might be historic. The resulting Program Comment clarifies this objective: "As with the Army, the Air Force and the Navy consider their inventory of Wherry and Capehart properties, including any associated structures and landscape features, to be eligible for the National Register of Historic Places for the purpose of Section 106 compliance" (Advisory Council on Historic Preservation 2004). Through the Program Comment, the Air Force, the Navy, and the Advisory Council developed a programmatic treatment of this class of military housing. This treatment includes the current historic context, development of neighborhood design guidelines, preparation of a brochure for potential developers highlighting the Federal

Rehabilitation Tax Credit program, and interviews with past Air Force and Navy residents of Wherry and Capehart era housing.

7.1.2 Summary of Methodology

The historic context was developed applying an integrated program of archival research, selective field investigation, data analysis, and report preparation.

7.1.2.1 Archival Research

Primary and secondary source research was undertaken. Initial work focused on a comprehensive literature review of secondary sources, including previous studies on Wherry and Capehart era housing. These studies included *"For Want of a Home…" A Historic Context for Wherry and Capehart Military Family Housing* (U.S. Army Environmental Center 1996) and *Housing an Army: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (U.S. Army Environmental Center 2003). Cultural resources surveys completed for the Naval Facilities Engineering Command Engineering Field Division South also were reviewed.
Additional research was undertaken into the topics of postwar suburbanization, Federal housing policy, civilian and military demographics, and postwar house design and construction.

Congressional reports, hearings, government documents, and statistical data from the United States Census Bureau were compiled. Additional primary sources included the operational files of key agencies, which encompassed program memos, data for Congressional reports and hearings, drawings, photographs, and housing statistics.

7.1.2.2 Field Investigations

Field investigations were completed at five installations (two Air Force, two Navy, and one Marine Corps) with inventories of Wherry, Capehart, and appropriated-funds housing. In consultation with the Departments of the Air Force and the Navy, installations were selected following the identification of active bases with Wherry and Capehart era housing as documented in the Air Force's Real Property Inventory Database and the Navy's and Marine Corps' Internet Navy Facility Assets Data Store Management System database. Installations were selected for their geographic diversity, active status, range of housing types, range of architectural style, association with important architects or designers, and ability to demonstrate post-World War II planning principles and suburbanization themes.

Field investigations included on-site reviews of installation historical records and previous architectural surveys; architectural survey and documentation of buildings; surveys of neighborhood plans and landscape elements; and, interviews with installation personnel knowledgeable about the housing.

7.1.2.3 Data Analysis and Report Preparation

Archival and architectural survey data then were analyzed to develop a companion historic context to the previously completed Army investigation. The current study was organized to enable comparisons on the housing programs implemented by the military services during the period. The

two studies present a comprehensive picture of Wherry and Capehart era military housing across the Department of Defense.

7.2 SIGNIFICANCE OF WHERRY, CAPEHART, AND APPROPRIATED-FUNDS HOUSING FOR THE PURPOSES OF PROGRAM COMMENT

Prior to World War II, military family housing was extended to officers and their families. As the nation entered World War II, the military possessed a small inventory of family housing limited to approximately 15,000 units maintained by the Army and 1,183 family public quarters under the stewardship of the Navy (U.S. Navy 1956). "Supplemented by the plentiful supply of private housing, these quarters were adequate to accommodate the small percentage of married men who served in the Armed Forces of the 1930s" (U.S. Senate 1957:4).

International policy influenced the demographics of the U.S. military in the postwar years. Following World War II, military force strength was authorized at a level higher than any other peace time period in U.S. history. The services sought to maintain their force strength through the retention of highly trained career professionals. The higher number of active-duty officers and enlisted personnel in the postwar years resulted in a severe housing shortage. This shortage became acute after military family housing was extended to enlisted personnel. In addition, housing and personnel support during the period ranked lower in military funding priority than funding for mission critical areas, such as technology and operational facilities (Gilpatric 1951:2-3).

The Wherry and Capehart acts were designed to address the military housing shortage. The legislation led to the construction of much-needed family housing through public-private partnerships, which effectively supplemented military housing construction funded through appropriated funds. As a class of properties, the houses constructed for military families under the Wherry and Capehart programs embodied the characteristics of suburban design principles that evolved during the 1950s and 1960s as applied to military housing. The need to construct family housing was associated directly with the size of the standing military during the Cold War era and the desire by the services to retain highly trained personnel as part of a technologically complex and sophisticated military. In general, the significance of housing constructed under the Wherry and Capehart era programs lay not in the individual buildings, but in the scale of the construction programs. These large-scale programs resulted in planned neighborhoods embodying the community and housing design principles of the period to accommodate the expansion of the armed forces to meet the national challenges the U.S. faced during the Cold War.

7.2.1 Military Architecture

7.2.1.1 Scale of Housing Shortage and Construction Program

The Air Force and the Navy entered the postwar period with family housing inventories that were too small to meet demand and that contained unacceptable substandard units. In 1949, the Air Force determined that a total of 121,000 family housing units were required by the service. The Air Force 1949 inventory contained 17,954 units, of which, 36 per cent were substandard (U.S. House of Representatives 1949a:8). In 1951, the Navy identified the need for family housing to support 44,000 shore-based personnel. In that year, the Navy controlled 39,842 temporary low-cost rental units comprising defense housing, Quonset huts, and trailers. Of these rental units, 14,000 were considered substandard. Additional housing also was needed at home ports for families of personnel serving at sea (U.S. House of Representatives 1949:13).

During the Wherry and Capehart era, approximately 200,000 housing units were constructed for Department of Defense military families nationwide. Of this total, approximately 146,290 units were added to the housing inventories of the Air Force, Navy, and Marine Corps. The Wherry Act resulted in the construction of an estimated 62,475 units, while approximately 77,208 housing units were constructed under the Capehart Act. Housing units built using appropriated funds numbered 6,607. This dramatic increase in the military family housing inventory occurred in the impressively short time frame of thirteen years – the duration of the Wherry and Capehart Acts.

7.2.1.1.1 Public-Private Partnership

One notable aspect of the Wherry and Capehart Acts was the public-private partnership forged to construct military housing. Congress had traditionally funded military construction through the Federal appropriations process. In the first years of the postwar military housing shortage, Congress authorized the construction of family housing but limited appropriations. Low funding levels translated to slow progress in meeting military family housing demand. The Wherry Act and later Capehart Act were the legislative vehicles for addressing the military family housing shortage. Under these acts, private-sector contractors were afforded financial incentives to build military family housing through mortgages guaranteed by the FHA. These partnerships allowed for the construction of large-scale housing projects in areas of the country where mortgages were difficult to obtain. These partnerships resulted in the construction of housing that was compatible with units available in the civilian housing market.

7.2.1.1.2 Reflection of Dominant Domestic Architecture of Period

One objective in the implementation of the Wherry and Capehart programs was to create military housing that compared favorably to new civilian housing of the period. During the 1950s, the civilian housing market shifted dramatically. Single-family detached houses set in suburban residential developments became favored over multi-family apartment buildings and urban row houses. Individual house designs abandoned traditional styles in favor of the contemporary ranch house style. The housing projects built for the Air Force, Navy, and Marine Corps under the Wherry and Capehart programs reflected the evolution of these civilian housing trends and suburban development within constraints imposed by program requirements, military housing standards, and budgets.

7.2.1.1.2.1 Community Design and Building Placement & Orientation

New civilian suburban developments provided the model for the design of Wherry and Capehart neighborhoods. Popular design features incorporated into military neighborhoods included wide curvilinear streets, front lawns, long blocks, and three-way intersections. Buildings generally were placed along the streets with uniform setbacks that provided overall neighborhood cohesiveness.

The development patterns for residential communities shifted dramatically in the postwar period as traditional high-density urban patterns declined in popularity. Although master plans often were developed for early suburbs, these suburbs frequently were located in close proximity to metropolitan areas served by public transportation, and these suburbs evolved over time. Prior to World War II, single-family houses constructed in suburban areas frequently were built by independent building contractors who erected individual houses for clients on privately owned lots.

The postwar housing boom saw wholesale development of more geographically isolated residential communities under the auspices of a single developer. Street plans, house design, building setbacks, driveways, accessory buildings, open space, play areas, neighborhood amenities, and

landscaping often were planned and constructed for the housing community as a whole. House size, scale, materials, construction, and price were standardized, creating homogeneity of building stock and attracting occupants of similar socio-economic levels. Many of the standardized design and construction technologies employed by large-scale private developers were influenced by those developed for the rapid military mobilization during World War II. These approaches were well-suited to the construction of military family housing in the postwar years.

7.2.1.1.2.2 House Design

The design and construction of the military housing units of the Wherry and Capehart era were influenced strongly by contemporary trends in civilian housing design and development. Large-scale private sector developments emphasized standardized design, standardized materials, and rapid construction. Architectural variation and traditional construction practices all but vanished. Identical designs, mass-produced standardized building materials, and prefabricated architectural components resulted in holistic residential communities with little architectural variety. The adoption of standard-measure materials – based on 4- by 8-foot sheets of plywood and drywall – by the construction industry simplified house construction greatly. The size of studs, windows, doors, shingles, siding, and virtually every other building material were standardized. Construction crews, specialized by task, worked with assembly-line efficiency through residential developments. Traditional structural materials, such as brick and stucco, were interpreted as veneers applied over plywood-clad frames. New materials were introduced; aluminum siding and asbestos board were inexpensive, easy to install, and required little maintenance. Interior plans reflected changing domestic attitudes and orientation towards the nuclear family. Formal separation of family spaces was eliminated in favor of open plans. Kitchens often were separated from living/dining rooms by breakfast counters or pass-through cabinets rather than solid walls.

7.2.1.1.2.2.1 Size, Scale, Proportion, Materials, Ornamentation, Amenities

The evolution of the civilian housing market and military housing during the 1950s and early 1960s are illustrated in the differences between the housing built under the Wherry Act and the housing built under the Capehart Act. In general, the multi-unit buildings built under the Wherry program were phased out in favor of single-family detached housing or duplex family housing under the Capehart program. The house designs under the later Capehart program reflected rising housing expectations in size and amenities generally through additional bedrooms, bathrooms per unit, increased storage and closets, and accommodation for individual automobiles.

7.2.2 Military History

Family housing during the Wherry and Capehart era reflected a significant change in the peacetime military. Prior to World War II, military family housing was financed with government-appropriated funds and extended to officers. The Cold War and accompanying policy of peace through deterrence prompted the need for both a large peacetime military and new weapons systems. In addition, family housing benefits were an important factor in retaining highly trained enlisted personnel. The need for housing competed with military missions to develop and deploy weapons with global capabilities, often resulting in reduced funding for housing construction.

In the immediate postwar years, military families competed for limited rental housing on the civilian market; many of these units were substandard. The Wherry and Capehart acts created programs that addressed the critical military housing shortage at minimal cost to the government, thus

enabling Congress to focus defense appropriations on the development of new military technologies to counter the communist threat.

Military housing areas constructed during the Wherry and Capehart eras transformed military life and military bases. For the first time in the history, enlisted personnel were provided housing that allowed their families to accompany them. At many Navy and Air Force installations, Wherry and Capehart housing areas was constructed on base. The increased numbers of on-base dependents led to expanded family services and the eventual construction of family support facilities such as commissaries, post exchanges, and medical facilities.

7.2.2.1 Shift to Large, Technologically Advanced Peacetime Military Force

Following World War II, world political conditions mandated that the United States maintain a large active-duty military comprising highly trained personnel. The adversarial relationship between the Soviet Union and Western allies evolved into the prolonged tensions of the Cold War period. Previously isolationist, U.S. foreign policy shifted focus to deterring worldwide Communist expansion.

The military services developed new technologies, including nuclear weapons, to counter this threat. The Air Force, with its air delivery power, was essential to this strategy. The Navy expanded its worldwide presence and developed new conventional and nuclear capabilities. Trained, skilled professionals were required to develop and operate military weapons and technology of increased complexity and sophistication. The military competed with private-sector industry to retain highly trained personnel.

While the size of the armed forces was reduced during the immediate postwar period, personnel numbers were consistently high during the Cold War. The size of the military was reduced from more than 10.7 million personnel in 1945 to approximately 1.3 million in 1947, but the personnel level of more than 2 million during the 1950s and 1960s was higher than any peacetime military in U.S. history.

7.2.2.2 Role of Enlisted Personnel Accompanied by Families

In order to attract and retain the skilled military professionals necessary to support the expanded foreign policy, the Department of Defense recognized the need to revise its restrictive policies on married personnel and to provide additional family housing. Historically, the armed forces did not accommodate married enlisted personnel or provide services to their families. Married personnel accompanied by families usually were officers; enlisted men did not serve accompanied by wives or children. In the nineteenth-century Navy, both officers and enlisted men primarily lived aboard ships. Formal family support services for enlisted personnel were not available on Army installations in the early twentieth century during the period when the Army developed its first aviation divisions. Married people enlisted or were drafted during World War II, but military families received minimal support.

During the 1950s, the Air Force and the Navy shifted from services staffed predominantly by single men to services staffed predominantly by married personnel accompanied by dependents. The number of married Air Force enlisted men doubled during the late 1950s, from 20 per cent in 1955 to 40 per cent in 1961. Twenty per cent of enlisted Navy men were married in 1955, while 32 per cent were married in 1961. Surveys completed by departing personnel indicated that the lack of adequate

family housing was a primary reason for separating from the service. Departure rates were highest among the most highly skilled personnel.

7.3 WHERRY AND CAPEHART ERA MILITARY FAMILY HOUSING: CHARACTER-DEFINING FEATURES

As discussed in the preceding chapters, Wherry and Capehart era military neighborhoods adopted site-specific plans developed by private sector developers working for the installation level clients. These neighborhoods varied in scale, architectural style, and dwelling type. Despite the unique character of individual family housing areas, Wherry and Capehart era housing shared general characteristics with civilian housing developments of the period due to the intent of the military housing program, the use of FHA-guaranteed mortgages, and the similarities in construction materials and technologies.

Wherry and Capehart era programs were intended to provide military families with housing that was comparable with that found in the civilian sector within the constraint of Federal enabling legislation. Each service developed military housing requirements to support this architectural objective. For example, housing designs met minimum spatial requirements and included bedroom-to-bathroom ratios. Unit size, as measured in total square footage; and the number of amenities, including the number of bathrooms; were defined and graduated by military rank. The Air Force and the Navy established a preference for single-family and duplex units, as opposed to multi-family buildings. Neither service promoted the construction of linear nor grid neighborhoods, but rather encouraged development plans incorporating gently winding streets. The Air Force discouraged the incorporation of cul-de-sacs. A detailed discussion of military housing standards is contained in the preceding chapter.

FHA guaranteed mortgages were used to finance both private developments and Wherry and Capehart era military housing areas. All applicants for FHA guarantees were required to comply with FHA standards. These standards addressed the overall development as well as individual houses.

The FHA generated subdivision standards for streets, green space, and building placement. Superblocks, curvilinear streets, cul-de-sacs, and courts were encouraged. The FHA influence on neighborhood design was far reaching. FHA-guaranteed communities constructed during the 1930s served as the model for postwar suburban development (Ames and McClelland 2002).

The FHA also established minimum standards for the design and construction of housing financed through mortgages secured through the agency's mortgage insurance. As a result, the agency regulated the general architectural program and neighborhood design of both military and private sector developments. These regulations extended to house size; the amount, location, and type of storage; the minimum kitchen countertop area; and the spacing of kitchen (USAEC 2003:3-48, 3-49). Federal standards specified room size, type, light, ventilation, and privacy. The ratio of bathrooms-to-bedrooms was regulated for buildings of three and four units (USAEC 2003:3-49).

While the military and FHA established overall criteria for subdivision and house design, neither dictated standardized designs to meet these criteria. Infinite variation was possible for both neighborhoods and housing within budgetary limits; no architectural styles, forms, or materials were mandated. Indeed, military guidelines promoted housing areas reflecting regional design idioms and methods of construction. A variety of housing types were constructed in a wide range of materials, footprints, orientations, roof forms, and window types. Housing areas also differed in design within an installation.

The qualities that render Wherry and Capehart era housing recognizable as a product of the postwar period are closely associated with the dominant construction materials and technologies. Postwar materials, such as asbestos, aluminum, concrete block, and plywood, frequently were used. The regional use of brick and stone veneers was common in Wherry and Capehart era neighborhoods. Legislation enacted during the period mandated the use of modular measure, a method of construction whereby standardized building components were used, enabled the quick and efficient construction of large numbers housing. Postwar large-scale merchant builders constructed over 2,500 new units per year (USAEC 2003:3-33). Merchant builders applied assembly-line approaches to new house construction. The single-story, ranch style, popularized by architects such as Richard Neutra, was almost universally used because it met the FHA minimum standards and could be constructed quickly.

Wherry and Capehart era military housing and neighborhoods frequently differed from their private-sector counterparts in their pattern of evolution over time. Unlike suburban communities comprising privately owned houses whose improvements frequently departed from the neighborhood's original uniform design, military family housing areas were maintained and modified to a single consistent standard. Military housing also was subject to high turnover as personnel were reassigned within the service. Consolidated management to military housing standards and frequent turnover necessitating intensive cosmetic maintenance resulted in little variability in how component housing units evolved over time.

7.4 INTEGRITY AND CHANGES OVER TIME

As a class of resources, the housing constructed under the Wherry and Capehart era is turning 50 years of age. Since their construction, these housing units have been occupied by numerous military families. Examination of the historical records for housing at five installations documented continual maintenance and repair interspersed with periodic renovations and upgrades to modernize the dwelling units and to improve amenities. These improvements have been necessitated by military housing standards to maintain the quality of military family life.

Historic properties are cultural resources that possess significance and integrity. Intensive maintenance, repair, and renovation have the potential to affect a building's ability to convey its important associations. Changes in design, replacement of original materials, and the addition of new building components may alter a building to the degree that it no longer reflects its original design and construction. The comparative analysis of the original and current appearance of housing constructed during the Wherry and Capehart era determines its historical integrity and is measured by the aspects of location, design, setting, materials, workmanship, feeling, and association. The cumulative results of ongoing programs of maintenance and renovations generally have diminished the overall individual building integrity of design, materials, and workmanship. The following discussion enumerates the many changes over time that have affected the integrity of Wherry and Capehart housing.

7.4.1 Maintenance

Wherry and Capehart era housing was changed through routine maintenance activities required by the continual turnover of the units through a succession of military families. Between occupants, units generally undergo routine maintenance, repairs, kitchen and bathroom upgrades, and repainting. In addition, the military has made concerted efforts over the last two decades to decrease general maintenance costs. For example, formerly wood exterior materials have been covered or replaced with synthetic siding to decrease general maintenance costs and to eliminate continual

repainting. Wood eaves have been encased in metal. Original interior plaster walls were replaced with drywall.

7.4.2 Ongoing Upgrades to Meet Housing Standards

The Air Force's and the Navy's inventories of Wherry and Capehart era housing have been upgraded periodically to meet continually evolving housing standards. These upgrades typically included expansions of net floor area, addition of interior and exterior storage space, elimination of one-bedroom units, addition of bathrooms, installation of air conditioning, and upgrading of amenities. Other improvements were intended to increase the energy efficiency of the buildings while enhancing the exterior appearance. The installation of exterior insulation and finish systems, such as Dryvit, lowered heating and cooling costs and created an attractive low-maintenance finish. Insulated glass windows in synthetic frames and sash further improved efficiency and appearance with the added benefit of low maintenance.

The earliest upgrading of Wherry housing generally occurred within the first decade of their existence as the Wherry units were purchased by the Federal government prior to the construction of housing under the Capehart program. Wherry housing was built to meet a $9,000 per-unit cost ceiling. Air Force units ranged from one to four bedrooms and averaged 835 square feet; Navy units ranged from one to three bedrooms and averaged 768 square feet. By the late 1950s, Wherry units were remodeled to modernize and enlarge kitchens, combine one-bedroom units to create two-bedroom units, enlarge master bedrooms, add covered porches, and create additional storage. When Capehart housing was built, its size represented a change in standards toward larger housing. In 1956, the square footage of Air Force Capehart units ranged from 950 to 2,100 square feet, depending on rank. In 1959, the square footage of Navy Capehart units ranged from 1,080 to 2,100 square feet, also depending on rank.

Current standards demonstrate that allowable floor areas have increased slightly since the Capehart housing was built. Policies issued by the Office of Management and Budget (OMB) in 1993 outline minimum, normal, and maximum net floor areas. Current net floor-area standards relevant to this study range from a normal 1,000 square feet for a two-bedroom dwelling to a maximum 2,100 square feet for a four-bedroom dwelling (Table 12).

Based on these newer living standards, Wherry and Capehart housing projects have been renovated and upgraded since the 1990s. In the most extreme cases, buildings were stripped to the studs and foundations and essentially rebuilt using new materials. In some cases, exterior walls were extended to incorporate larger floor areas. New bathrooms and kitchens were periodically installed and upgraded.

Another type of upgrade to Wherry and Capehart housing involved installation of air conditioning. Air conditioning was provided in some locations, whereas at other locations, only the enabling equipment was installed so that air conditioning could be added in the future. According to the 1993 OMB policy, "Air conditioning may be installed in living quarters only in locations where during the six warmest months of the year the dry bulb temperature is 80 F or higher for over 650 hours or the wet bulb temperature is 67 F or higher for over 800 hours" (Office of Management and Budget 1993). In locations that meet this standard, evaporative cooling is required where it is feasible and more economical than refrigeration systems (Office of Management and Budget 1993). Examples from the case studies in Appendix A where evaporative cooling units were installed include Wherry housing at Mountain Home AFB, where they were installed in 1961, and Wherry housing at Travis AFB, installed in 1969.

Table 12. Square Footages for Wherry, Capehart, and Current Government Housing

Wherry Units	Capehart Units	1993 OMB Standards**
• Did not link square footage to unit size, specified $9,000 per-unit cost ceiling • Air Force: 1-4 bedrooms, average 835 s.f. • Navy: 1-3 bedrooms, average 768 s.f.	**1956 Air Force Design Guidelines** (2-4 bedrooms) • Enlisted: 950-1,080 s.f. • Lt/Capt: 1,100-1,250 s.f. • Major/Lt. Col: 1,400 s.f. • Colonel: 1,670 s.f. • Commander: 1,837 s.f. • General: 2,100 s.f. **1959 "Criteria and General Requirements" – Navy** (2-4 bedrooms) • Enlisted: 1,080 s.f. • Ensign/Warrant: 1,250 s.f. • Captain, Commander, Lt. Commander: 1,400 s.f. • Captain (if commanding officer): 1,670 s.f. • Flag Officer: 2,100 s.f.	**1 bedroom** (for multi-family or apt. construction only) 550 s.f. (minimum) 730 s.f. (normal) 810 s.f. (maximum) **2 bedrooms** 750 s.f. (minimum)* 1,000 s.f. (normal) 1,250 s.f. (maximum) **3 bedrooms** 960 s.f. (minimum)* 1,415 s.f. (normal) 1,670 s.f. (maximum) **4 bedrooms** 1,190 s.f. (minimum)* 1,670 s.f. (normal) 2,100 s.f. (maximum)

*Applies to flats or multi-family construction. Not recommended for single-family or duplex houses.
**Larger houses permitted for military commanders of large stations and military officers of general or flag rank.

Source: "Briefing Memorandum for the Chief" 1956; Office of Management and Budget 1993; USAEC 2003:4-7; Department of the Air Force 1949a:4; Korink 1949:3; U.S. House of Representatives 1959c:1954; U.S. Air Force 1956:11.

7.4.3 Removal

The ongoing evolution of military priorities to meet ever-changing strategic goals has resulted in shifts in personnel levels and numbers of military families requiring housing. In addition, the competitive civilian housing market near many military installations has resulted in a decrease in the need for military family housing in some areas. One result of these trends is the consolidation of housing on military installations. Older housing that was no longer needed and had outlived its usefulness was removed. Prior programs for the removal of Wherry and Capehart era housing neighborhoods occurred before the buildings reached 50 years of age. The programs complied with Section 106 process of the NHPA through project-specific consultation.

7.4.4 Congressional Directive

As part of the Conference Committee Report to the Defense Appropriations Act for Fiscal Year 1997, Congress directed the armed services to develop strategies to reduce costs associated with the management of historic properties. The large inventory of family housing constructed under the Wherry and Capehart era programs that was about to turn fifty years of age presented an opportunity to develop an innovative and cost-effective programmatic approach to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. This approach consists of documenting Wherry and Capehart housing as a class through this current study, neighborhood guidelines, a brochure for developers highlighting the Federal Rehabilitation Tax Credit program, and

oral interviews with former residents of Air Force and Navy Wherry and Capehart era family housing. According to the ACHP Program Comment, "By following this comment and the outlined six-step approach, the Air Force and the Navy will have met their responsibilities for compliance under Section 106 regarding management of their Wherry and Capehart era housing" (Advisory Council on Historic Preservation 2004). Therefore, the Air Force and the Navy could proceed with planned undertakings described in the Program Comment, including maintenance, repair, layaway, mothballing, privatization and transfer out of federal agency ownership, substantial alteration through renovation, demolition, and demolition and replacement. These undertakings have the potential to remove character-defining features of this housing, diminishing their integrity.

7.4.5 Privatization

The Air Force and the Navy are in the process of privatizing their stocks of housing, including family housing constructed during the Wherry and Capehart era. The Air Force Housing Privatization (HP) and the Navy Public-Private Venture (PPV) programs were initiated under the Military Housing Privatization Initiative (MHPI), contained in the National Defense Authorization Act for Fiscal Year 1996. The purpose of the MHPI is to work with the private sector to renovate or replace insufficiently maintained or modernized housing more quickly than possible through the traditional Federal appropriations process. It was estimated that the Federal appropriations process would cost taxpayers approximately $16 billion, take 20 years to accomplish, and require contractors to adhere to military construction specifications that make projects more costly than in the private market (Office of the Deputy Undersecretary of Defense 2006).

7.4.6 Conclusion

The ability of a historic resource to convey its significance lies in its integrity. When constructed, the buildings and neighborhoods reflected their era of construction through such character-defining features as windows and doors, exterior materials, roof form and sheathing, landscaping, and amenities including carports or garages. Many Wherry and Capehart neighborhoods have experienced considerable change since constructed in the 1950s and 1960s. Renovations undertaken as part of the Wherry acquisition program of the Capehart era, modernization of kitchens and baths, upgrades in finishes to reflect personal expectations of the occupants, energy efficiency programs, privatization, and demolition affect the individual and collective integrity of Wherry and Capehart housing and neighborhoods. Table 13 (reproduction of Table 1) illustrates the effect of some of these changes on the as-built inventory.

Table 13. Wherry and Capehart Housing Constructed between 1949 and 1962 and Current Inventory*

Service	Wherry Units		Capehart Units	
	1949-1962 Inventory	Current Inventory	1949-1962 Inventory	Current Inventory
Air Force	38,014	5,388	62,816	19,933
Navy	17,434	3,196	10,020	7,049
Marines	7,027	496	4,372	2,786

*Reproduction of Table 1
Note: See Appendices D and E for breakdowns by installation
Source, 1949-1962 inventory: See Page D-1 for description of sources.
Source, current inventory: Air Force Real Property Inventory (RPI) and Internet Navy Facility Assets Data Store Management System Database (iNFADS)

The National Register Bulletin *Historic Residential Suburbs* recognizes that integrity depends on the context of an area's pattern of suburbanization and comparable neighborhoods (Ames and McClelland 2002). The integrity of a Wherry and Capehart era neighborhood "relies in part on the cohesion of the historic plan and aspects of spatial organization" (Ames and McClelland 2002). Spatial organization includes massing, scale, setback, historic plantings, circulation patterns, boundary demarcations, and other landscape features (Ames and McClelland 2002).

Neighborhood character-defining features include plan, streetscape, landscaping, density, setback, and amenities. In addition, modifications to buildings within a neighborhood also must be taken into consideration; "cumulative alterations and additions to large numbers of dwellings…threaten the integrity of the historic plan and the neighborhood's overall historic character" (Ames and McClelland 2002). These factors were considered when selecting the properties of particular importance.

7.5 IDENTIFYING WHERRY AND CAPEHART ERA HOUSING OF PARTICULAR IMPORTANCE

7.5.1 Program Comment

In accordance with the Program Comment published by the ACHP, the Navy and Air Force reviewed the historic context study to identify potential properties of particular importance. These properties were defined through a process of field investigation and further analysis within the historic context.

Historic context data first were analyzed to identify candidates for site investigation within the active housing inventory with the greatest potential to contain associated housing property types. Selected installations were documented in greater detail to identify properties that possessed both significance and integrity.

7.5.2 Criteria for Field Investigation

Archival data and real property databases provided by the Air Force (Air Force RPI), and the Navy and the Marine Corps (INFADS) were analyzed to select five case study installations for the current investigation. These installations were selected in consultation with the Air Force and the Navy for their potential:

- to convey the broad social history of housing during the 1950s and early 1960s;
- to provide information on changing Air Force and Navy demographics and the relationship between Wherry and Capehart housing and the Air Force and Navy structures;
- to represent the work of important architects, designers, developers, and contractors; and,
- to illustrate the range of contemporary housing types and styles represented in Wherry and Capehart era military housing.

In addition, installations also were selected from the active military housing inventory which:

- represented a range of installation types;

- represented geographic diversity;
- contained the largest sample of housing units represented by housing areas developed over the period and
- represented changes over time.

The following installations were selected for on-site investigation applying the above criteria:

Naval Base Ventura County, California
Western United States
739 buildings
Single-family, duplex, multi-family
Wherry, Capehart, Appropriated Funds

NSA Mid-South Memphis, Tennessee
Southern United States
161 buildings
Single-family, duplex, multi-family
Wherry, Capehart

MCAS, Cherry Point, North Carolina
Southeastern United States
856 buildings
Single-family, duplex, multi-family
Wherry, Capehart

Mountain Home AFB, Idaho
Northwestern United States
214 buildings
Single-family, duplex, multi-family
Wherry, Capehart, Appropriated Funds

Travis AFB, California
Western United States
875 buildings
Single-family, duplex, multi-family
Wherry, Capehart, Appropriated Funds

A summary of the field findings for these five installations is contained in Appendix F.

7.5.3 Field Verification and Analysis

Field investigations of the five selected installations consisting of site-specific archival research and architectural survey data documented housing examples from each program located at each installation. Data included the respective construction programs, building types and dates of construction, features of note, architects, associated neighborhoods and landscape features, and changes over time. These data were analyzed further to identify properties that possessed important associations with the historic context and integrity from the Wherry and Capehart era. Based on this analysis, the following properties were identified as properties of particular importance within the Wherry and Capehart era due to their historical association and resource integrity:

- Three senior officer houses designed in the International Style by Richard J. Neutra located at Mountain Home AFB, which represent the work of an important architect for the military under the Capehart Act, and

- The Catalina Heights neighborhood at NBVC as a collection of Capehart program dwellings that collectively convey the principles of postwar suburbanization adapted to a military context.

A summary of these Properties of Particular Importance is included below. A detailed discussion is located in Appendix G.

7.6 RECOMMENDATIONS FOR PROPERTIES OF PARTICULAR IMPORTANCE

7.6.1 Mountain Home AFB

7.6.1.1 Summary Description

Mountain Home AFB is located approximately 40 miles southeast of Boise, Idaho, on a high desert plateau. The installation was established in 1942 as a temporary base to train bomber crews. In 1948, the base was transferred to the USAF and was assigned in 1953 to the Strategic Air Command (SAC). The base served as a SAC alert facility, ready to deploy bombers at a moment's notice until 1966. In the 1950s, the base offered few permanent quarters for personnel and few housing options were available in the neighboring civilian market. Permanent family housing at Mountain Home AFB was constructed under both the Wherry and Capehart housing program.

The Wherry neighborhood at Mountain Home AFB was constructed in 1956. Hummel, Hummel, & Jones of Boise, Idaho, and R.J. Neutra and R.E. Alexander of Los Angeles, California, were listed on the 1954 drawings as architects. The drawings were submitted by Robert E. Alexander and read "Designed R.J.N. and R.E.A." (Mountain Home AFB drawings files). The neighborhood contained 500 units in 92 buildings. Forty-nine buildings with 253 units were constructed for officers, while 43 buildings containing 247 units were constructed for airmen. Apart from the six senior single-family officer quarters, all buildings in the Wherry neighborhood were two-stories and housed five and six families. The buildings exhibited elements of the International Style associated with architects Neutra and Alexander. Such elements included the overall streamlined design and the flat roofs with project overhangs. The Wherry housing built at Mountain Home AFB was renovated extensively and was demolished by December 2005; only three buildings of the former Wherry neighborhood managed by the Sagebrush Hotel were standing as of December 2005.

Mountain Home AFB had two projects constructed under the Capehart program. In 1959, a 270-unit project designed by Hummel, Hummel, & Jones of Boise, Idaho, and R.J. Neutra & R.E. Alexander of Los Angeles, California was completed. The 270-unit project comprised two physically separated parcels. The airmen's neighborhood contained 81 buildings with 162 units (no longer standing), while the officer neighborhood contained 56 buildings with 108 units. The original drawings indicated that airmen and officer housing were designed according to Air Force housing specifications. In contrast, the architects for the distinctly-different three senior officer houses located in the middle of the officer neighborhood were identified on the drawings as the noted architectural firm Neutra and Alexander (Mountain Home AFB drawings files). These three buildings exhibited many elements of the International Style.

In 1962, a second 300-unit project was constructed at Mountain Home AFB. This project was designed by Hummel, Hummel & Jones of Boise, Idaho (Mountain Home AFB drawings files). This neighborhood contained 86 buildings with 172 units constructed for airmen and 65 buildings containing 65 units for officers.

7.6.1.2 Significance within program

The three senior officer quarters constructed in 1959 in the Old Capehart neighborhood are associated with the designs of the nationally known architectural firm Neutra and Alexander and exemplify the application of the International Style to military housing. Neutra and Alexander was a prominent architectural firm, and both principals were noted designers. The association of the three senior officer quarters with the prominent architectural firm and their expression of International Style make these three buildings unusual when compared to the surrounding Capehart neighborhoods at the installation and nationwide. Documented examples of the work of Neutra and Alexander for the U.S. military include both Wherry and Capehart projects at Mountain Home AFB, Idaho; housing at Naval Air Station Lemoore, California; and appropriated-funds housing at Yuma Proving Ground, Arizona.

7.6.1.3 Integrity

The three senior officer quarters constructed in 1959 exhibit the highest degree of integrity of location, design, setting, materials, and workmanship in the neighborhood.

7.6.2 Catalina Heights

7.6.2.1 Summary Description

Completed in 1958, the Catalina Heights neighborhood was an Air Force project that supplied family housing to nearby Oxnard AFB. The housing area is located off-installation, approximately five miles from the base. In its current use as a Navy family housing area, Catalina Heights is approximately twelve miles from NBVC. The Capehart project provided single-family, duplex, and multi-family units for enlisted men, non-commissioned officers, and officers. The neighborhood was designed by the architectural firm of Porter, Urquhart, McCreary & O'Brien in partnership with Victor J. Spotts. Seventy-two buildings containing 315 units were constructed. In general, the neighborhood lacked formal landscaping; sidewalks lined one side of the street. Housing Area 27 embodies the typical characteristics of Wherry and Capehart era design and methods of construction as applied between 1949 and 1962. The housing area exhibits civilian suburban design ideals applied to a military context and retains its integrity from its original period of construction.

The buildings constructed in Catalina Heights consist of stucco-covered concrete-masonry-unit construction accented with vertical-board trim. The buildings are supported by concrete slab foundations. The one- and two-story buildings have shallow-pitched gable roofs. Windows are horizontal-sliding aluminum sash units. Original designs for Catalina Heights included attached carports for officers and non-commissioned officers. Detached, concrete-masonry-unit walls were constructed on the front of some units creating a small patio area. Retractable clotheslines were attached to privacy walls.

The interiors of the units are similar in design and finish to other Capehart housing units. The primary doorways open onto small entry areas. Additional entrances are located off the kitchens to

provide access to the patio area, and in the living rooms to provide access to the backyards. The kitchens are located at the front of the units, with living and dining rooms looking out on the backyards. The two-story units contain a half bath on the first floor with a full bath on the upper level. The second stories contain the bedrooms. The single-story units, both single-family and duplex were reserved for officer housing. The interiors of the one-story buildings are similar to the other Capehart housing units with an entry hall, front-facing kitchen, and living and dining rooms overlooking the back yards. Narrow halls lead to the bedrooms. Each unit contains two bathrooms, one of which is attached to the master bedroom.

7.6.2.2 Significance within program

Catalina Heights displays the distinctive characteristics of neighborhoods constructed under the Capehart program. The community is designed around a curvilinear street pattern with uniform setbacks of the buildings. Building types include both one- and two-story; single-family, duplex, and multi-family; and, enlisted and officer housing. The use of concrete block with wood accents is indicative of the cost-efficiency and speed of construction typical during the Capehart program. Catalina Heights Capehart housing incorporated screened service yards with retractable clotheslines, fenced rear yards, and carports for non-commissioned and commissioned officers. This community also included a small retail, or "convenience" store in its original plan; a feature not common in Capehart neighborhoods.

7.6.2.3 Integrity

Catalina Heights exhibits among the highest levels of integrity of the Capehart era housing still in active use by either the Navy or the Air Force. Some roofing material and trim have been replaced, but many buildings retained original windows, flooring, kitchen cabinets, hardwood floors, and bathroom tile wainscots. The neighborhood also retains its retail store and master TV antenna system. The neighborhood retains integrity of design, materials, workmanship, location, setting, feeling, and association in both its individual buildings and as a significant concentration of resources united historically by plan and physical development.

7.7 SUMMARY

Wherry and Capehart era military housing represents a nationwide construction campaign that reflected significant changes in the peacetime military. Recommendations for properties of particular importance to the Air Force and Navy historic context for Wherry and Capehart era military housing were identified from the active military housing inventory that possessed both important historical associations and resource integrity from the period. The properties of particular important are summarized in Appendices F and G.

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